



## Research Article

# The relationship between menarche knowledge and anxiety of school-age children in facing pre-menarche

Sekar Ayu Rahmadani<sup>1</sup> and Istiqomah Istiqomah<sup>2\*</sup>

University Muhammadiyah Malang, Malang, Indonesia

### Article Info

**Received:** 31 October 2024

**Accepted:** 2 March 2025

**Online:** 30 March 2025

### Keywords:

Anxiety

Knowledge

Menarche

School-age children

### Abstract

Anxiety in facing menarche is a mood characterized by worry and fear that something bad will happen during menarche. One of the anxiety factors that affect menarche is knowledge. Children who understand menstruation tend not to experience anxiety and see it as normal, while children who lack understanding about menstruation tend to feel anxious. The type of research used is quantitative research with correlational methods. The research subjects used were 63 girls aged 8-13 years who had not yet menarche. The sampling technique used was purposive sampling with the menarche knowledge scale for knowledge variables and the Z-SAS (Zung Self-Rating Anxiety Scale) scale for anxiety variables. Data were analyzed using Spearman's rho correlation. The results showed a negative relationship between menarche knowledge and anxiety which can be interpreted that the higher the knowledge of menarche, the lower the anxiety experienced by the individual and vice versa, the lower the knowledge of menarche, the higher the anxiety experienced by the individual. The novelty of this study lies in the pre-menarche phase, which is the period before the first menstruation. The focus on this stage is a novelty, because most studies more often discuss anxiety that occurs after menarche, not before. In addition, this study also explores the knowledge that school-age children have about menarche affecting their anxiety levels. The novelty lies in measuring children's knowledge on a topic that is generally considered taboo, as well as how this knowledge affects their perception of upcoming bodily changes. In order to reduce anxiety in school-age children related to menarche, schools, parents and health workers can work together in providing knowledge about menstruation so as to increase children's knowledge and reduce anxiety in facing menarche.

2717-7602/ © 2025 by PRESS.

Published by Genç Bilge (Young Wise)

Pub. Ltd. This is an open access article  
under CC BY-NC-ND license



### To cite this article

Rahmadani, S.A., and Istiqomah, I. (2025). The relationship between menarche knowledge and anxiety of school-age children in facing pre-menarche. *Psychology Research on Education and Social Sciences*, 6(1), 21-30. DOI: <https://doi.org/10.5281/zenodo.15147784>

## Introduction

Menstruation is a sign that someone has entered puberty. In terms of health, menstruation is uterine bleeding that occurs regularly every month, which is influenced by the hormones estrogen and progesterone. The first menstruation in children is commonly called menarche. Menarche is a very natural thing and will be experienced by every woman so there is no need to worry about it. Menstruation occurs when the inner layer of the uterine wall decays and comes out in the form of blood or in other words menstruation occurs when the egg is not fertilized by sperm cells (Devilawati,

1 Department of Psychology, State University of Malang, Malang, Indonesia. E-mail: [sabrinajt3010@gmail.com](mailto:sabrinajt3010@gmail.com)

2 Corresponding Author: Department of Psychology, State University of Malang, Malang, Indonesia. E-mail: [dewi.fatmasariedy.fpsi@um.ac.id](mailto:dewi.fatmasariedy.fpsi@um.ac.id). ORCID: 0000-0003-0069-7824

2020). Menarche usually occurs at the age of 10-16 years in the middle of puberty and before the child's reproductive period (Retnaningsih et al, 2018).

Indonesian Demographic and Health Data in 2017 showed that the majority of children who experienced menarche were aged 11-14 years (Devi, 2019). Developed and developing countries have different ages of menarche for each child (Sulung, 2018). There are some data that have been obtained from several regions that have been studied, in the UK the average age of menarche is 13 years (Mulyani, 2019), in Saudi Arabia 12 years (Harbi, 2018), in Japan 12 years (Sumi, 2018), in South Korea 12 years (Seo MY, 2020), in Germany 12 years (Canelon, 2020), and in the United States 11 years (Martinez, 2020)). So that in developed countries the average age of menarche in children is 12 years. In Indonesia, the Philippines, Sudan, Yemen, India and Turkey the average age of menarche is 13 years (Sulung, 2018), in Papua New Guinea 18 years (Mulyani, 2019), in Ghana 15 years, in Egypt and in Colombia 12 years (Leone, 2020). So that in developing countries the average age of menarche in children is 13 years, menarche is considered normal at the age of 12-14 years, early if under 12 years and late if over the age of 14 years (Sholicha, 2020).

Menstruation is a change that occurs naturally for women and the normal time for menstruation is 1-8 days (Tantry et al., 2019). Children who menarche will feel confusion, anxiety, anxiety, sadness, stress, and irritability, (Phonna et al., 2017). Physical complaints such as headache, backache, breast tenderness, and abdominal pain may also be present. Common and striking symptoms of menarche are fear and anxiety (Herliasari et al., 2022). Anxiety is a sign that arouses vigilance, provides warnings about dangers that may be coming, and encourages action to overcome potential threats that arise due to growth, change, and new experiences that have never been lived, including in the search for one's identity and life goals (Nurmaularni & Rahmi, 2023).

Anxiety in the face of menarche is a mood characterized by a sense of worry and fear that when menarche will happen something bad. The symptoms include heart palpitations, shortness of breath, headaches, abdominal pain, sleep disturbances, abnormal fear, self-doubt, and perception of threat (Nainggolan, 2013). This is related to uncertainty about what will happen during the first menstruation, about hygiene, fear of menstrual leakage, or fear of physical changes and puberty, how menstruation will affect social life and daily activities (Nainggolan, 2013).

The impact of anxiety in facing menarche is not confident and confused about what is happening (Masan & Eka, 2018), difficulty focusing, forgetting easily, having frustration and irritability (Fitria & Ifdil, 2021), sleep disturbances, digestive disorders, and decreased immune system (Suyanti et al., 2022), children's limitations in controlling control of the body, 2022), children's limitations in controlling emotions which results in loss of motivation to work, feeling less energized, feeling bored in all activities that involve themselves, and lack of enthusiasm to complete school assignments which have an impact on the instability of children's achievement (Nggarang & Jahum, 2019), decreased children's reproductive health due to lack of concern for hygiene when facing their first menstruation, unclean environment, and lack of knowledge about the physiological process of menstruation and how to use sanitary napkins (Intanniza et al., 2023).

Anxiety factors that affect menarche consist of two factors, namely external and internal factors. External factors include physical integrity threats and self-system threats, while internal factors include age, stressors, environment, gender, and education (Stuart, 2013). Age is related to reproductive potential and determines the beginning of physical changes. Younger adolescent girls tend to be less prepared for menarche and may perceive it as a surprising disruption (Lutfiya, 2017). Societal stigma against talking about menstruation also contributes to the lack of knowledge and positive attitudes of adolescents towards natural physical changes (Proverawati et al., 2009). Lack of knowledge about reproductive health can be caused by limited sources of information and lack of material taught at school (Nafiroh, 2013).

The knowledge a child has before experiencing their first period plays an important role in their mental and emotional readiness for menarche. Understanding the signs and symptoms of menstruation gives them greater encouragement to be ready for the change. Adequate knowledge about menstruation can increase psychological

readiness and reduce excessive anxiety. Adequate information about the menstrual process allows children to be more confident, and more physically and emotionally prepared to face menarche (Nadila, 2023). Thus, a good level of understanding related to menstruation significantly affects readiness in facing menarche. Children who do not have good knowledge of menarche will react shocked, surprised, and afraid (Orringer & Gahagan, 2010). This happens because children's lack of knowledge about menstruation can make it difficult for children to accept menarche (Budiarti, 2012). This lack of knowledge can cause anxiety (Safaria and Saputra, 2012). Children who have an understanding of menstruation tend not to experience anxiety and see it as normal (Hidayatullah & Shadiqi, 2020), and vice versa, children who lack understanding about menstruation have a higher level of anxiety (Imam, 2012).

The results of research conducted by Hayati and Gustina (2020) on the relationship between knowledge and the level of anxiety of adolescent girls facing menarche at TT Junior High School Jambi using proportional random sampling technique and the HARS scale with 40 subjects, showed that 30 people (75%) experienced moderate anxiety, 6 people (15%) experienced mild anxiety, and 4 people (10%) experienced severe anxiety, which had an impact on their mental and emotional health, and affected their daily quality of life. Research conducted by Siregar (2021) on the relationship between knowledge of adolescent girls and anxiety during menarche at AR Junior High School with the subject of 50 7th grade students using the total sampling technique, 35 (70%) experienced severe anxiety, 10 people (20%) experienced moderate anxiety, and 5 people (10%) experienced mild anxiety, this anxiety can affect emotional states in interpersonal relationships. In addition, anxiety can also affect a person's readiness to face certain situations, and has an impact on the mental and nervous state of the individual. Research conducted by Ivanna and Suwardi (2022) entitled adolescents' knowledge about menstruation on anxiety levels facing menarche with 96 subjects in grades 4, 5, and 6 who have not experienced menstruation using total sampling techniques and a scale adopted by Nazarina (2017), as many as 48 people (50%) experienced panic anxiety, 44 people (45.8%) experienced severe anxiety, 4 people (4.2%) experienced moderate anxiety and no one experienced mild anxiety, this can have an impact on mental health and adolescent adaptation to physical and emotional changes that occur during puberty.

Preliminary studies conducted by researchers at one of the elementary schools found that there were 3-4 students who felt anxious when they were about to menstruate. The subject stated that she was anxious when she heard complaints from her friend who was already menstruating. Her friend said that her private parts were bleeding, dizzy, and her stomach felt like she was being hit during menstruation. So that the subject became afraid and had difficulty sleeping because of thoughts. The subject also felt embarrassed to ask her teachers and parents.

### **Problem of Study**

This study aims to determine whether there is a relationship between menarche knowledge and anxiety of school-age children in facing pre-menarche at elementary schools X. This research is expected to contribute information and can be a reference for further researchers in the field of psychology related to menarche knowledge and anxiety in school-age children. The hypothesis in this study is: There is a relationship between menarche knowledge and anxiety of school-age children in facing pre-menarche at elementary school X Malang City.

## **Method**

### **Research Model**

The type of research used in this study is quantitative research with correlational methods. Correlational research aims to determine whether or not there is a relationship between one variable and another (Azwar, 2013). While the quantitative approach is used to measure and analyze phenomena using numbers, and perform statistical analysis to test the relationship between variables and draw conclusions (Sugiyono, 2013). In this study there are two variables, namely the independent variable and the dependent variable. Independent variables are variables that are usually measured or observed to see the relationship or influence on other variables (Nursalam, 2013). The independent variable in this study is menarche knowledge. While the dependent variable (Dependent) is a variable whose score or value is determined by other variables (Nursalam, 2013). The dependent variable in this study is anxiety.

## Participant

The subjects of this study were girls aged 8-13 years who had not yet menarche, totaling 63 people. In accordance with Sugiyono opinion (2013) that the number that is feasible in research is between 30 and 500 samples. The technique used is a non-probability sampling technique with purposive sampling where sampling considers certain things by giving an assessment to the sample of the selected population. The assessment is taken if it meets the criteria according to the research topic (Sugiyono, 2013). The subject criteria used in this study are: (1) Female students, (2) Age 8 - 13 years, (3) have not experienced menarche, and (4) Active students who attend elementary school X. Data in this study were obtained by distributing questionnaires to respondents.

## Data Collection Tools

The instruments used in this study were questionnaires of each variable, namely menarche knowledge and anxiety. The questionnaire used in the knowledge variable is a menarche knowledge questionnaire with multiple choice question answers from respondents consisting of the level of knowing, comprehension, and application adopted from Mayasari (2017) with an alpha value of 0.780 and consists of 12 question items in the form of 4 items regarding the meaning and factors causing menarche, 4 items regarding the phases and symptoms of menarche, and 4 items regarding the correct use of pads and disorders during menarche. The assessment criteria given are score 1 if the respondent answers correctly and score 0 if the respondent answers incorrectly. While the scale used in the anxiety variable uses the Z-SAS scale (Zung Self-Rating Anxiety Scale) adapted by Afriana (2017). This scale consists of 20 items with a reliability level of 0.915.

## Procedure and Data Analysis

This research has three main procedures, namely the preparation stage, the implementation stage, and the analysis stage. The preparation stage starts from the researcher deepening the material through theoretical studies, compiling research designs, and preparing research instruments. At the implementation stage, the researcher distributed the scale to subjects who met the criteria set by the researcher. These criteria include female students who are actively attending elementary school X with an age range of 8-13 years who have not yet had menarche. The data analysis stage is to analyze the results obtained from distributing 2 scales with correlational tests, then conclude how the relationship between menarche knowledge and school-age children's anxiety.

## Results

**Table 1.** Description of Research Subjects

Categories	Frequency	Percentages
<b>Age</b>		
8 years old	13	20,6%
9 years old	14	22,2%
10 years old	19	30,2%
11 years old	13	20,6%
12 years old	4	6,4%
<b>Class</b>		
Grade 3	15	23,8%
Grade 4	17	27%
Grade 5	21	33,3%
Grade 6	10	15,9%
<b>N</b>	<b>63</b>	<b>100%</b>

Based on table 1, it is known that the research subjects were 63 students, with 15 grade 3 students, 17 grade 4 students, 21 grade 5 students, and 10 grade 6 students. The most dominating age is 10 years old with 19 subjects.

**Table 2.** Categorization of Menarche & Anxiety Knowledge Scale Data

Categories	Frequency	Percentages
<b>Menarche Knowledge</b>		
High	44	69,8%
Medium	17	27%
Low	2	3,2%
<b>Anxiety</b>		
High Indication	30	47,6%
Medium Indication	31	49,2%
Low Indication	2	3,2%
<b>N</b>	<b>63</b>	<b>100%</b>

Based on table 3.1 above, data obtained from 63 subjects about menarche knowledge, 44 subjects were in the high menarche knowledge category with a percentage of 69.8%, 17 subjects were in the moderate menarche knowledge category with a percentage of 27%, and 2 subjects were in the low menarche knowledge category with a percentage of 3.2%. As for anxiety in facing menarche, 30 subjects had high indications of anxiety with a percentage of 47.6%, 31 subjects had moderate indications of anxiety with a percentage of 49.2%, and 2 subjects had low indications with 3.2%.

**Table 3.** Hypothesis Test

Variable	Spearman's rho	Correlation Coefficient
Menarche knowledge -Anxiety	0,009	-0,328*

n=63, \*p < .01, two-tailed

The results in the table show that the correlation coefficient between the menarche knowledge variable and anxiety in elementary school X school-age children is -0.328\* so that menarche knowledge is negatively related to anxiety, which means that the higher the menarche knowledge, the lower the anxiety experienced by the individual and vice versa, the lower the menarche knowledge, the higher the anxiety experienced by the individual.

This hypothesis test was conducted using IBM SPSS Statistic software by testing spearman correlations with the results in table 5 above. Based on the above criteria, it can be seen that the correlation of the two variables is significant because the significance figure is 0.009 ( $p < 0.01$ ). The correlation shows a negative relationship between menarche knowledge and anxiety in school-age children at elementary school X Malang City.

## Discussion

Based on the results of data analysis, it is known that there is a significant relationship between menarche knowledge and anxiety in school-age children. This proves that the initial hypothesis is in accordance with the results of the study, namely there is a relationship between menarche knowledge and anxiety in school-age children. The results of this study are supported by research conducted by Purwanti (2022) on 63 adolescent girls aged 14-21 years who experienced premenstrual syndrome in Pati, as many as 25 (39.7%) people had less knowledge and 25 (39.7%) people experienced moderate anxiety, the results showed a negative relationship which can be interpreted that individuals who have high knowledge tend not to experience anxiety than individuals who have low knowledge.

Another study from Mukhoirotn & Taufik (2016) on 33 adolescent girls aged 13-14 years in the As'adiyah Dormitory of Darul Ulum Jombang Islamic Boarding School also showed that there was a significant negative relationship between knowledge and menarche anxiety in adolescent girls which can be interpreted that the higher the knowledge, the lower the anxiety and vice versa, the lower the knowledge, the higher the anxiety. Darsini et al. (2019) explain that knowledge is information that has been obtained and is well understood and can be applied, which is finally embedded in a person. Knowledge can also be understood as the result of what a person knows, which develops through

experience. The more knowledge a child has about menarche, the lower the level of anxiety they feel. Conversely, a lack of knowledge about menarche can lead to higher levels of anxiety in children (Anggraeni & Sari, 2018).

Based on the results of research on the relationship between menarche knowledge and anxiety of school-age children in facing pre-menarche at elementary school X Malang City, out of 63 subjects, 44 (69.8%) subjects were in the high knowledge category, 17 (27%) subjects were in the moderate knowledge category, and 2 (3.2%) subjects were in the low knowledge category. The results of this study are in line with the findings of Utami (2019) regarding the relationship between the level of knowledge and the level of anxiety of adolescents in facing menarche in grade V and VI students at Sd Negeri 1 Ceper Klaten, showing that of the 31 respondents studied, the majority of female students were in the category of sufficient menarche knowledge. Knowledge is a very important aspect for everyone, including children experiencing menarche. Adequate knowledge about menarche can significantly affect the anxiety level of adolescent girls when facing menarche (Nora, 2020). Factors that affect a person's level of knowledge include age, experience, gender, information received, environment, socio-cultural aspects, and occupation (Utami, 2019). The better information children receive, the higher the level of knowledge they have. Conversely, if the information obtained is lacking, the child's level of knowledge will also be low.

In this study, 47.6% of people had high indications of anxiety, 49.2% of people had moderate indications of anxiety and 3.2% of people had low indications of anxiety. Prolonged feelings of anxiety are unpleasant experiences and can make a person feel restless, difficult to concentrate, afraid, and confused (Putri, 2023). Although anxiety at menarche is a natural reaction, not all adolescent girls experience it. Some may feel anxious because they feel pain, whereas others may not feel any physical discomfort from the changes (Meiyuntariningsih, 2018). The high level of anxiety can be related to the lack of knowledge about menarche. Respondents' limited knowledge about menstruation including the signs and symptoms experienced, the menstrual phase, and the impact of menstruation can increase anxiety. In addition, physical conditions also play an important role, as changes that occur during menarche can cause anxiety in children (Suarni, 2020). This anxiety can result in a lack of self-confidence and low self-esteem, such as fear of making friends because of worries about body odor, acne, or weight gain, as well as concerns about ridicule from friends (Novitarum et al., 2022). Nazariana (2017) mentioned that many adolescents feel embarrassed, anxious, and afraid when experiencing their first menstruation or menarche. Some children may perceive menstruation as something disgusting, dirty, or limiting their activities, which is the psychological impact of menstruation. There is also the assumption that menstrual blood indicates a disease.

Based on the results of the research conducted, the most dominant age group was 10 years old with a total of 19 students. Age affects a person's mindset and capacity to capture information, so that as age increases, a person's mindset and ability to capture information will develop, and the knowledge gained will also be better (Ertiana & Zain, 2023). At a very young age, children often have not obtained sufficient information about menstruation, so menarche can be considered a burden and make them less prepared to face it. Ratnasari's (2019) research shows that the younger the child's age, the more likely they are to feel unprepared for menarche. Suryani (2018) also mentioned that younger children often feel unprepared to accept menarche because they consider it a burden. In contrast, children who are ready to face menarche tend to feel happy and proud, because they consider themselves to have reached the stage of biological maturity.

Research by Suwaryo & Yuwono (2017) revealed that knowledge affects the way a person thinks. In addition, increasing age increases the brain's ability to acquire and process information, so that greater knowledge can reduce the anxiety of female students in facing *menarche*. This shows that children with a more mature age tend to be able to think more logically in dealing with problems, so they experience lower levels of anxiety. In contrast, very young children feel less prepared to accept *menarche*, making it a stressful experience and causing greater anxiety in the face of the event. According to Ikasari and Anggana (2020), class has a significant influence on research on knowledge levels because each grade level offers a different portion of learning. The higher the grade level, the more learning material has been obtained

at school. The research results of Tech et al. (2021) also showed that the level of knowledge based on class characteristics showed that students in higher grade levels generally had better knowledge.

Children's lack of knowledge about menstruation is caused by several factors such as inexperience, not utilizing social media to find information, lack of health education from parents, and embarrassment when asking questions. (Suyanti et al., 2022). Children usually need information about personal matters from parents, teachers and peers. However, sometimes the information provided by parents with low knowledge is very limited, especially regarding reproductive topics. In contrast, parents with better knowledge tend to be more open and ready to provide information about reproduction. Parents' education level is the main factor influencing children's knowledge (Parwata et al., 2019). According to Dewi & Khusnal (2017), educated mothers play an important role in providing information to children about menstruation such as the age of first menstruation, the duration of the menstrual cycle, and how to maintain hygiene during menstruation. With good knowledge from parents, especially mothers, children can have a positive understanding and respond to menstruation in a good way. Conversely, in the absence of such information, misunderstandings and wrong thinking can lead to fear and anxiety in children when experiencing menstruation for the first time.

According to Tirta et al. (2020), one of the factors for children's readiness to face *menarche* is information or knowledge. Adequate information can increase children's readiness for the changes they will experience, so as to reduce psychological disorders and anxiety. High anxiety can cause children's unpreparedness in facing *menarche*. This is in line with Febri's research (2022) which shows that a lack of knowledge about *menarche* is often caused by children's lack of understanding of the physical changes they will experience as women, as well as a lack of information available from the surrounding environment. Indarsita & Purba's (2017) research also noted that the lack of access to books on reproductive health, especially regarding menstruation, can affect the low level of knowledge of female students about menstruation. Therefore, it is important for parents, educators, and the health team to consider this when conducting counseling. Parents, educators, and health teams should not assume that children will automatically understand this, but should pay more attention to ensure adequate understanding, so that the anxiety and fear experienced by adolescents when facing *menarche* can be reduced and overcome.

The novelty of this research is that it emphasizes the pre-menarche phase, which is the period before the first menstruation. The focus on this stage is novel, because most studies more often discuss anxiety that occurs after menarche, not before. In addition, this study also explores the extent to which school-age children's knowledge about menarche affects their anxiety level. The novelty lies in measuring children's knowledge on a topic that is generally considered taboo, as well as how this knowledge affects their perception of bodily changes.

### Conclusions

In this study, it can be seen that there is a negative relationship between *menarche* knowledge and anxiety of school-age children at SD X Malang City. The negative relationship shows that the higher the knowledge, the lower the anxiety, and vice versa, the lower the knowledge, the higher the anxiety. The most dominating age is 10 years old.

In order to reduce anxiety in school-age children related to *menarche*, schools, parents and health workers can work together in providing knowledge about menstruation so as to increase children's knowledge and reduce anxiety in facing *menarche*. Meanwhile, children are expected to be more active in asking questions when given explanations about menstruation and not consider menstruation as a taboo. Future research is expected to be conducted with a wider sample coverage and more diverse variables, as well as focusing on the theme of menstruation, to obtain more comprehensive and new research results.

### Limitations of Study

The weaknesses and limitations in this study are that when the research took place, there were 4 students who were not present during the research process so that the total subjects decreased from 67 students to 63 students. In addition,

the school only gave one hour for research and made the school mosque as a place to research so that the subjects did not have a distance between one another and could cause the subjects to cheat on the answers of friends next to them.

In order to reduce anxiety in school-age children related to *menarche*, schools, parents and health workers can work together in providing knowledge about menstruation so as to increase children's knowledge and reduce anxiety in facing *menarche*. Meanwhile, children are expected to be more active in asking questions when given explanations about menstruation and not consider menstruation as a taboo. Future research is expected to be conducted with a wider sample coverage and more diverse variables, as well as focusing on the theme of menstruation, to obtain more comprehensive and new research results.

### Acknowledgements

The authors would like to express their deepest gratitude to all those who have supported the authors during the research process. Special thanks to Dr. Istiqomah, M.Si., for her invaluable guidance and very useful input for this research paper. In addition, the authors are grateful to the authors' family for their unwavering support and encouragement throughout this project. Finally, the authors would like to thank the anonymous reviewers for their constructive comments, which have significantly improved the quality of this work.

### References

- Arini, P. D., Utami, I., ST, S., Keb, M., & Mufdlilah, S. S. T. (2020). Literature Review of the Relationship between Knowledge about Menstruation and Anxiety of Adolescent Girls Facing Menarche.
- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.). Washington, DC: American Psychiatric Association.
- Anggraeni, W., & Sari, K. I. P. (2018). The Relationship between Adolescent Knowledge about Menstruation and Anxiety Levels in Facing Menarche among 4th and 5th Grade Students of SDI Darul Hikmah Krian Sidoarjo. *Nurse and Health: Journal of Nursing*, 7(1), 80-85.
- Azwar, S. (2010). *Research Methods*. Yogyakarta: Pustaka Pelajar Offset.
- Canelón, S. P., & Boland, M. R. (2020). a Systematic Literature Review of Factors Affecting the Timing of *Menarche*: the Potential for Climate Change to Impact Women's Health. *International journal of environmental research and public health*, 17(5), 1703.
- Darsini, D., Fahrurrozi, F., & Cahyono, E. A. (2019). Knowledge; review article. *Journal of Nursing*, 12(1), 13-13.
- Desi, F. (2016). Factors associated with Anxiety Level of Adolescent Girls When Experiencing Menarche at SMP Jaya Krama Kec. Bringin Kab. Serdang. Bringin Kab. Serdang: University of North Sumatra.
- Dewi, C. F., & Khusnal, E. (2017). The relationship between knowledge and readiness to face menstruation in 5th grade students at Muhammadiyah Wirobrajan 3 Yogyakarta Elementary School (Doctoral dissertation, Aisyiyah Yogyakarta University).
- Devilawati, A. (2020). Relationship between Stress Level and Menstrual Cycle. *Journal of Aisyiyah Medika*, 5(2).
- Diananda, A. (2019). Adolescent psychology and its problems. *ISTIGHNA: Journal of Education and Islamic Thought*, 1(1), 116-133.
- Ertiana, D., & Zain, S. (2023). Education and knowledge of mothers about nutrition in relation to the nutritional status of toddlers. *Journal of Ilkes (Health Sciences)*, 14(1), 3.
- Fauziah, N. A. (2022). Relationship between Knowledge and Attitude with Personal Hygiene during Menstruation in Santriwati at MTs Pondok Pesantren Al- Amanah Al-Gontory, South Tangerang City. *Environmental Occupational Health And Safety Journal*, 2(1), 81-88.
- Febri, F. D. L. (2022). Analysis of Readiness to Face Menarche in Elementary School Students at SDN Tambilung, Bogor Regency in 2021. *Journal of Midwifery*, 11(2).
- Hafidha, M. (2020). An Overview of the Incidence of Menarche in Students in Grades IV, V, and VI of SD Negeri Beji Wates Kulon Progo in 2020 (Doctoral dissertation, Poltekkes Kemenkes Yogyakarta).
- Harbi, K. K. A., al-Qahtani, M. M., Yousef, G., & Ali, S. I. (2018). Age at Menarche among School Adolescents Girls in Saudi Arabia: Environmental Factors. *Open Journal of Preventive Medicine*, 8(09), 283-290.
- Hayati, F., & Gustina, G. (2020). Relationship between Knowledge and Anxiety Level of Adolescent Girls Facing Menarche at SMP Negeri 13 Jambi City. *Journal of Akademika Baiturrahim Jambi*, 9(2), 149-153.
- Herliasari, Z., Indrayani, T., & Widowati, R. (2022). Analysis of Readiness to Face Menarche of Early Adolescents in Sdn Jakasampurna X Bekasi City in 2022. *Journal of Husada Karya Jaya Nursing Academy*, 8(1), 28-38.
- Hidayatullah, M. S., & Shadiqi, M. A. (2020). Construction of Psychological Measurement Tools. *Lambung Mangkurat University Banjarbaru*, 1-69.



- Imam. (2012). Menarche Preparation for Teenage Girls. Semarang: UNDIP
- Intaniza, N., Tampubolon, N. R., & Bayhakki, B. (2023). The Relationship Between Level of Knowledge and Anxiety in Facing Menarche One Year First. *JUKEJ: Jompa Health Journal*, 2(2), 120-129
- Indarsita, D., & Purba, Y. (2017). Knowledge and Readiness of Adolescent Girls in Facing Menarche at Sd Negeri No 064023 Medan in 2017.
- Ikasari, F. S., & Anggana, R. (2020). School-age children's knowledge of proper handwashing in Martapura sub-district. *Journal of Indonesian Nurses*, 4(1), 316-328.
- Kaplan, H. I., & Sadock, B. J. (2010). Synopsis of Psychiatry, Volume 2 (Dr. Widjaja Kusuma, Trans.). Ciputat-Tangerang: Binarupa Aksara. (Original book published 1991).
- Kartono, K. (2006). Psychology of Women. Bandung: Mandar Maju
- Ministry of Health RI. Infodatin Reproduction Adolescent-Ed.Pdf. Adolescent Reproductive Health Situation. 2017. p. 1-8.
- Khaulani, F., Neviyarni, S., & Irdamurni, I. (2020). Developmental phases and tasks of elementary school children. *Scientific Journal of Basic Education*, 7(1), 51-59.
- Latifah, H., & Ratnaningsih, D. (2016). Level of Knowledge about Puberty in Class VIII Adolescent Girls at SMP Muhammadiyah III Depok Sleman. *Journal of Permata Indonesia*, 7(1).
- Leone, T., & Brown, L. J. (2020). Timing and determinants of age at menarche in low-income and middle-income countries. *BMJ Global Health*, 5(12), e003689.
- Martinez, G. M. (2020). Trends and patterns in menarche in the United States: 1995 through 2013-2017.
- Meutya, I. (2018). Recognizing menarche in adolescent girls Widyaiswara BKKBN Aceh.
- Mulyani, R. (2019). The Relationship between Nutritional Status and Maternal Menarche History with Age of Menarche in Junior High School Students in Bandar Lampung. *Sai Betik Nursing Scientific Journal*, 14(2), 187-193.
- Mukhoirotin, M., & Taufik, M. L. (2016). The relationship between knowledge and family support with menarche anxiety in adolescent girls. *Journal of Holistic Nursing Science*, 3(2), 8-16.
- Nadila, S. S. (2023). Factors Associated with Anxiety Level in Facing Menarche in Students at SDI Teladan Al-Hidayah 1 South Jakarta (Doctoral dissertation, National University).
- Nainggolan, E., & Tambunan, D. (2013). Parents' anxiety level facing adolescent behavior change during puberty in Balige 3 village. *Journal of nursing HKBP Balige*, 1(1), 82-90.
- Nazariana, S. (2017). The relationship between knowledge about menstruation and adolescent anxiety in facing first menstruation (menarche).
- Nggarang, B. N., & Jahum, G. (2019). The Relationship between Family Support and Anxiety in Class VII Adolescent Girls in Facing Menarche at Widya Bhakti Ruteng Junior High School. *Health Insights*, 4(2), 81-90.
- Nixon (2016). Reminiscence Therapy: Solution Approach as a Nursing Action Effort in Reducing Anxiety, Stress and Depression. Jakarta: Trans Info Media
- Notoatmodjo, S. (2010). Health Research Methodology. Jakarta: Rineka Cipta
- Novitarum, L., Pujiastuti, M., Karo, M. B., & Sihotang, Q. G. (2022). The Relationship between the Level of Knowledge About Menstruation and Anxiety of Class VIII Adolescent Girls at Smp Negeri 3 Pematang Siantar in 2021. *Journal of Darma Agung Husada*, 9(2), 1-9.
- Nurmaularni, N., & Rahmi, K. H. (2023). The Relationship Between Sex Education and Anxiety Facing Menarche In Early Adolescent Girls In Bekasi City. *Tambusai Health Journal*, 4(3), 4186-4193.
- Nurravni, V., Susilawati and Haryani, H. (2021). The Relationship between Adolescent Girls' Knowledge about Menarche and Anxiety Facing Menarche at SD Negeri 1 Pasirhalang, Sukaraja Health Center Work Area, Sukabumi Regency, *Journal of Health Sciences Karya Bunda Husada*, 7(2), pp. 24 - 32.
- Orringer, K., & Gahagan, S. (2010). Adolescent girls define menstruation: A multiethnic exploratory study. *Health care for women international*, 31(9), 831-847.
- Parwata, K. Y. L., Sudiarmika, A. A. I. A. R., & Devi, N. L. P. L. (2018). The Influence of Peers, Parents, and Teachers on Learning Problems of Superior Children. *Journal of Indonesian Science Education and Learning (JPPSI)*, 1(1), 1-11.
- Purwanti, I. T. A. (2021). The Relationship between Knowledge Level and Anxiety in Adolescent Girls Experiencing Premenstrual Syndrome in Rw 01 Tegalarum Pati Village (Doctoral dissertation, Sultan Agung Islamic University Semarang).
- Putri, D. M. F. S. (2023). The Relationship between the Level of Knowledge About Menstruation with the Anxiety Level of Early Adolescent Girls in Facing Menarche at Sd Saraswati Tabanan. *Medika Usada Journal*, 6(1), 39-46.
- Prayuni, E. D., Imandiri, A., & Adianti, M. (2019). Therapy for Irregular Menstruation with Acupuncture and Herbal Pegagan (Centella Asiatica (L.)). *Journal of Vocational Health Studies*, 2(2), 86-91.
- Proverawati, A., & Misaroh, S. (2009). Menarche first menstruation full of meaning. *Yogyakarta: Nuha Medika*, 144.
- Abadi, D. R., Dewi, A. P., & Nurchayati, S. (2015). Relationship between Family Support and Anxiety Level of Adolescent Girls in Facing Menarche. *Jom*, 2(2), 1007-1017
- Ratnasari, R. (2019). Knowledge of Early Adolescents in Facing Menarch. *Indonesian Journal for Health Sciences*, 2(2), 129-134.

- Retnaningsih, D., Wulandari, P., & Afriana, V. H. (2018). Readiness to Face Menarche with Anxiety Level in School-Age Children. *Kusuma Husada Health Journal*, 57-64.
- Santrock, J.W. (2012). *Adolescence Adolescent Development*. Jakarta: Erlangga.
- Seo, M. Y., Kim, S. H., Juul, A., & Park, M. J. (2020). Trend of menarcheal age among Korean girls. *Journal of Korean Medical Science*, 35(49).
- Sevi Budiati, A., & Apriliastuti, D. A. (2012). The relationship between the level of maternal knowledge about adolescent reproductive health and children's readiness to face puberty. *Journal of Midwifery*.
- Sholicha, M., Setiyawati, N., & Hernayanti, M. M. R. (2020). Characteristics and knowledge level of menarche in junior high school students at Depok 1 (Doctoral dissertation, Poltekkes Kemenkes Yogyakarta).
- Siregar, S. A. (2021). The Relationship between Adolescent Girls' Knowledge and Anxiety at Menarche at Smp Ar-Rahman in 2021. *Evidence Based Journal*, 2(3), 49-54.
- Stuart, G. W. (2006). *Handbook of mental nursing*. Egc.
- Suarni, L. (2020). Description of the Anxiety Level of Adolescent Girls Experiencing Menarch at Kholisaturrahmi Integrated Islamic Junior High School in Binjai. *JUMANTIK (Scientific Journal of Health Research)*, 5(1), 46-55.
- Sulung, N., & Yellisia, M. (2018). Factors associated with menarche at seventh grade students in junior high school. *Journal of Human Care*, 2(3), 1-13.
- Sugiyono, D. (2013). *Educational research methods quantitative, qualitative and R&D approaches*.
- Sumi, A., Iwase, M., Nakamura, U., Fujii, H., Ohkuma, T., Ide, H. & Kitazono, T. (2018). Impact of age at menarche on obesity and glycemic control in Japanese patients with type 2 diabetes: Fukuoka Diabetes Registry. *Journal of diabetes investigation*, 9(5), 1216-1223.
- Santrock, J.W. (2012). *Adolescence Adolescent Development*. Jakarta: Erlangga.
- Seo, M. Y., Kim, S. H., Juul, A., & Park, M. J. (2020). Trend of menarcheal age among Korean girls. *Journal of Korean Medical Science*, 35(49).
- Suryani, E & widyaningsih H. (2018). "Psychology of Mother and Child, Yogyakarta: Fitramaya." *Journal health community empowerment I(2): 154-64*.
- Suwaryo, P. A. W., & Yuwono, P. (2017). Factors affecting the level of community knowledge in mitigating landslides. *URECOL*, 305-314.
- Suyanti, S., Evitasari, D., & Suteja, N. E. C. I. (2022). Relationship between Knowledge and Anxiety Level of Adolescent Girls in Facing First Period (Menarche) in Class Vii Students at Mts Negeri 7 Sumedang in 2022. *Bunda Edu-Midwifery Journal (BEMJ)*, 5(2), 53-61.
- Tantry, Y. U., Solehati, T., & Yani, D. I. (2019). Overview of knowledge, attitudes, and self-care behaviors during menstruation in junior high school students. *Journal of Nursing and Midwifery Sciences*, 10(1), 146-154.
- Tech, et. al. (2021). The level of knowledge of upper grade students of public elementary school 3 blunyan regarding mini volleyball games. In *Frontiers in Neuroscience (Vol. 14, Issue 1)*.
- Tirta Suminar, et al. (2020). "The Effect of Menstrual Health Peer Education on the Readiness of Elementary School Students to Face Early Menstruation." *Kusuma Husada Health Journal* 16: 132-41.
- Toduho, S., Kundre, R., & Malara, R. (2014). The Relationship between Psychological Stress and Menstrual Cycle in 1st Grade Girls at Sma Negeri 3 Tidore Islands. *Journal of Nursing*, 2(2).
- Wiknjastro, H. (2007). *The science of midwifery*. Jakarta: Sarwono Prawirohardjo Library Foundation, 180(240), 653.
- Yusuf, S. (2016). *Psychology of Child and Adolescent Development*. Bandung: Teenage Workshop.
- Zuniawati, D. (2019). *Body fat triggers early menstruation*. Malang: Wineka Med