



## REPRODUCTIVE HEALTH EDUCATION STRATEGIES FOR PREPARING CHILDREN FOR MENARCHE: A SCOPING REVIEW

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## ABSTRACT

**Background:** Menarche a significant milestone in female adolescent reproductive health, signifies the onset of puberty and the transition to adulthood, bringing various social consequences. Adolescent girls' unpreparedness for menarche is a significant issue that can lead to anxiety, fear, and embarrassment. **Objective:** To explore scientific evidence on reproductive health education strategies for preparing for menarche in children. **Method:** This scoping review method was using 5 steps including identifying review question using the Population, Concept, and Context (PCC) framework Study Selection, Charting Data, Collating, Summarizing, and reporting the result. Literature searches utilized PubMed, ScienceDirect, and EBSCO databases, with article quality assessed using the JBI tool. **Results:** This review identified three themes: strategies for menarche preparation education (reproductive health education in schools, at home, and adolescent reproductive health services), barriers to menstrual readiness (limitations in discussing with family members, anxiety, and limitations in reproductive health education and economy), and sources of information (teachers, parents, and peers). **Conclusion:** The most appropriate menarche preparation education strategy is reproductive health education in schools. There is a need to enhance adolescent reproductive health services to ensure they receive accurate and reliable information about reproductive health, including preparing for menarche and menstruation.

Keywords: Strategies, Sexual and Reproductive Health, Menarche, Preparation, Children

## ABSTRAK

**Latar belakang:** Menarche merupakan tonggak penting dalam kesehatan reproduksi baru remaja perempuan yang menandakan dimulainya masa pubertas dan transisi menuju kedewasaan yang menimbulkan berbagai konsekuensi sosial. Ketidaksiapan remaja putri dalam menghadapi menarche merupakan masalah yang cukup besar karena dapat menimbulkan rasa cemas, takut, dan malu. **Tujuan:** Menggali bukti ilmiah tentang strategi edukasi kesehatan reproduksi untuk persiapan menghadapi menarche pada anak. **Metode:** Metode scoping review ini menggunakan kerangka *Population, Concept dan Context (PCC)* pemilihan studi, memetakan data, menyusun, merangkum dan melaporkan hasil. Pencarian literature menggunakan databases yaitu PubMed, ScienceDirect, EBSCO. Kemudian dalam penilaian kualitas artikel menggunakan alat penilaian JBI. **Hasil:** Tinjauan ini menemukan tiga tema yaitu strategi edukasi persiapan menarche pada anak yang meliputi (pendidikan kesehatan reproduksi disekolah, pendidikan kesehatan reproduksi dirumah dan layanan kesehatan reproduksi remaja), hambatan dalam mencapai kesiapan menstruasi yang meliputi (keterbatasan berbicara dengan anggota keluarga, kecemasan dan keterbatasan pendidikan kesehatan reproduksi dan ekonomi) dan sumber informasi meliputi (guru, orangtua dan teman sebaya). **Kesimpulan:** Strategi edukasi persiapan menarche yang tepat digunakan adalah pendidikan kesehatan reproduksi disekolah. Diperlukan peningkatan strategi layanan kesehatan reproduksi remaja guna memastikan mereka menerima informasi yang akurat dan terpercaya mengenai kesehatan reproduksi, termasuk persiapan menghadapi menarche dan menstruasi.

**Kata kunci:** Strategi, Kesehatan Seksual dan Reproduksi, Menarche, Persiapan, Anak

## INTRODUCTION

Adolescence, often known as puberty, is a phase of physical, cognitive, psychological, and social maturation (Wolf & Long, 2016). Puberty is typically described as the period when a youngster develops secondary sexual traits and reproductive functions. (Hu *et al.*, 2021).

Menarche, a crucial milestone in female teenage reproductive health, represents the commencement of puberty and the transition to maturity, with different social ramifications. (Id *et al.*, 2019). Girls typically enter puberty between the ages of 8 and 13, which is characterized by increased adrenal androgen production, pubic and axillary hair growth, sebaceous gland (acne), and apocrine gland activity. The first menstrual bleeding, known as menarche, occurs two to three years after puberty begins. Menarche typically begins between the ages of 12 and 12.5 years, and it progresses more slowly than other puberty-related changes. (Wolf & Long, 2016).

Preparing young girls for menstruation is crucial. They should get accurate and timely menstrual information prior to their first period (Lucy C Wilson, 2021). The ignorance of physical changes and the taboo around menarche often result in body shame, which impairs self-worth and the capacity to adjust to changes in physiological function. (Ghandour *et al.*, 2022). Future decisions about

reproductive health, such as sexual preferences and fertility, may be compromised by this. (Lucy C Wilson, 2021).

The numerous examples of women concealing their menstrual symptoms in circumstances where discussing sexual and reproductive health is no longer deemed taboo demonstrate that menstrual concealment is a respectable way to act in public.(Moffat & Pickering, 2019). Menarche is a common experience for women in low- and middle-income countries (LMICs), notably in the Middle East. This may be accompanied by feelings of anxiety, concern, guilt, and perplexity. (Chandra-Mouli, 2017). Health education on menarche is critical for increasing understanding and preparation. Health education or counseling in schools is critical, particularly on reproductive health concerns, because sustaining and enhancing health should be fostered as early as possible, including throughout the school years(Notoatmodjo, 2015).

Adolescent females' unpreparedness for menarche is a prominent concern among teenagers. This problem affects around 24 million girls in Indonesia who are around the age of 13. The majority of girls are ill-prepared and have not talked about these developments, according to survey data. Just 25% of individuals feel comfortable discussing their periods, and 17% are unaware that adolescence is marked by the menstrual cycle.(Davis *et al.*, 2018). Unpreparedness can cause worry, dread, and shame, prompting people to retreat from social networks. Adolescents have challenges to receive reproductive health treatments owing to personal characteristics, cultural and societal disparities, structural gaps in services, hostile healthcare staff, and unclear legislation.(Jannati *et al.*, 2022).

Most schools provide reproductive health information depending on age, therefore menstruation information is not provided before the age of 14, reinforcing the belief that girls do not understand what to expect and how to cope with the changes.(UNICEF, 2017). Menarche in Indonesia has been observed to begin as early as age ten.(Juliyatmi & Handayani, 2015).

Girls in many low- and middle-income countries grow up with preconceived notions about menstruation, are unprepared for it, and have no idea where or when to seek help because adults in their immediate environment, such as parents and teachers, know little about it and are hesitant to discuss it because it can be unpleasant, stressful, and embarrassing.(Chandra-Mouli & Patel, 2017).

According to prior study, just two out of fifty-six adolescent pupils experienced menarche, with most receiving information about menstruation only in religious studies. However, they do not completely comprehend the physiological mechanics of menstruation, which causes worry and anxiety when experienced for the first time. Additionally, they did not receive any guidance on maintaining hygiene or reproductive health when menstruating. Moreover, a large number of students have never received specialized education in reproductive health. The majority of women come from low-income homes, and most of their fathers are employed in low-paying jobs like construction, recycling, and agriculture. They live in tiny towns, and menarche is impacted by their unhealthy eating habits.(Rizkia, Setyowati, & Ungsianik, 2019).

This phenomena highlights the necessity for a special focus on "Reproductive Health Education Strategies for Preparing for Menarche in Children." This study aims to evaluate scientific evidence on reproductive health education techniques to prepare for menarche in children, combining relevant evidence sources from each discovered article.

## **METHOD**

Conducting a scoping review to assess research publications with the goal of mapping out evidence-based results and identifying gaps or contradictions between studies. This study focuses on reproductive health education initiatives for preparing individuals for menarche, which were examined using the most recent evidence base for scoping studies. A scoping review involves several stages, including creating research questions, discovering relevant publications, choosing relevant studies, charting data, organizing the information, summarizing conclusions, and publishing the results.(Arksey & O'Malley, 2005).

### Identifying the Research Question

Using the range of literature articles, identifying evidence-based results and gaps or discrepancies between scientific research. This study focuses on reproductive health education efforts that prepare people for menarche, which were evaluated using the most recent evidence base for scoping studies. Creating research questions, finding pertinent publications, selecting relevant studies, organizing material, charting data, summarizing findings, and reporting on the results are all included in a scoping review.

**Tabel 1. PCC Framework**

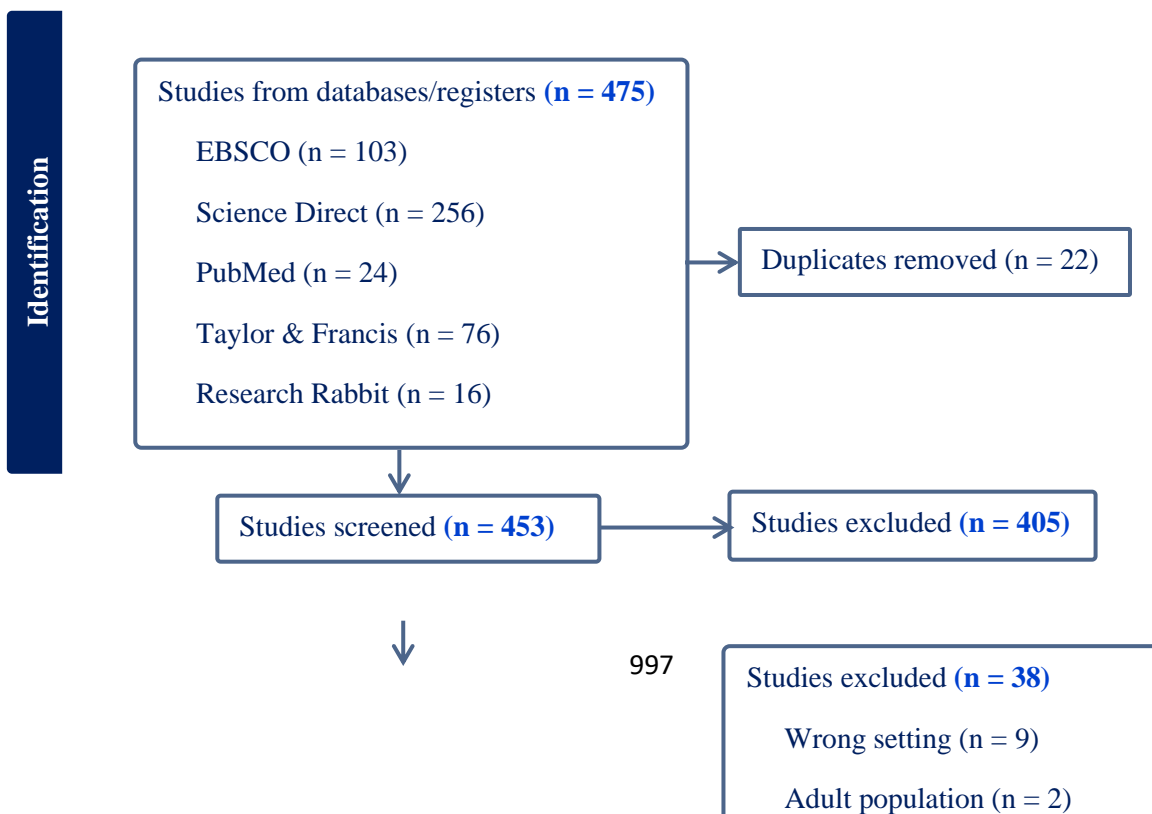
P (Population)	C (Concept)	C (Context)
Children	Reproductive Health Education for Menarche Preparedness	All Geographical Contexts

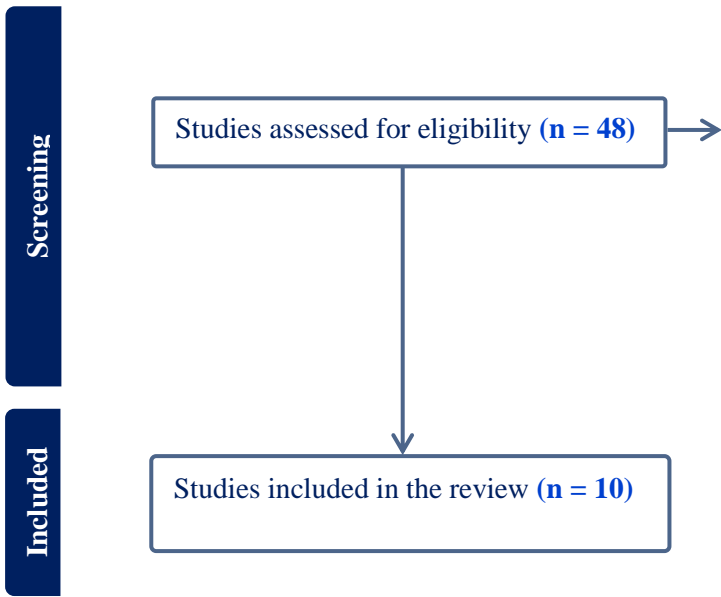
### Identifying relevant studies

The authors outlined the search approach, including the stages for gathering information, search strategies, and selecting scientific evidence. Data screening was carried out using inclusion criteria, namely publications published during the previous ten years (2014-2024) and written in both Indonesian and English. Exclusion criteria included review articles, opinion pieces, and already established review articles. The PRISMA Flowchart was used for data filtering since PRISMA is regarded acceptable for improving the quality of publication reporting. Ten articles that fit the requirements were found using the screening procedure. The researchers employed particular keywords organized in accordance with the PCC framework, as well as Medical Subject Headings (MeSH) approaches such as Boolean (AND and OR) and Truncation (\*). The literature search was carried out with the string (((((Strateg\*) AND (Reproductive Health Education)) AND (Puberty)) OR (Menarche)) AND (Preparation)) AND (Children).

### Study Selection

The research articles were chosen by thoroughly reading the whole article to verify compliance with the scoping review, removing duplicates, and screening titles and abstracts. The PRISMA-ScR flow diagram was used to define the scientific article search approach, create the review report, provide information on the research actions completed, and carry out quality assessments to enhance scientific article writing. Relevant studies were located using a search that comprised three databases: PubMed, Science Direct, and EBSCO. In addition, the researchers employed the Taylor & Francis and Research Rabbit search engines to discover grey literature. This study found 475 articles. After screening, eleven articles satisfied the requirements.





**Figure 1: PRISMA Flowchart**



### Charting the data

The Joanna Briggs Institute's data charting approach was utilized to synthesize data from research articles. This approach provides information on the article's author(s), title, year of publication, country, research purpose, kind of study, data collecting methods, number of participants/samples, and research outcomes. (Lockwood C, 2020).

**Table 2. Data Charting**

No	Title/Authors /Year	Country	Aim of Study	Type of Research	Method	Result
A1	Coming of age: a qualitative study of adolescent girls' menstrual preparedness in Palestinian refugee camps in the West Bank and Jordan (Ghandour <i>et al.</i> , 2022)	Oslo, Norway	The objective of this study is to analyze the preparation of adolescent girls living in Palestinian refugee camps in Jordan and the West Bank for menstruation.	Qualitative	<ul style="list-style-type: none"> <li>a. The females in the research ranged in age from 14 to 18. We conducted 39 individual IDIs with teenage females and facilitated 23 focus group discussions (FGDs) with 193 participants.</li> <li>b. All interviews and conversations were carried out in Arabic.</li> <li>c. We employed a triangulation strategy using IDIs, FGDs, and observations to obtain data.</li> </ul>	<ul style="list-style-type: none"> <li>a. This study revealed a need for greater menstrual preparation among the participants, particularly during the pre-menarche phase.</li> <li>b. Practical impediments to menstrual readiness include sanitary pad use, taboos around menstruation, and varying opinions on timing between girls and moms.</li> </ul>
A2	Teachers' perspective on implementation of menstrual hygiene management and puberty education in a pilot study in Bangladeshi schools (Mahfuz <i>et al.</i> , 2021)	Bangladesh	This study intends to evaluate the perspectives of Bangladeshi educators regarding the feasibility and long-term usefulness of teaching menstruation and puberty in both urban and rural settings.	Qualitative	A six-month study on the advantages, obstacles, and sustainability of teaching menstruation and puberty was carried out in four urban and rural public and private schools in Bangladesh, employing a multi-module experiment with twenty teachers.	<ul style="list-style-type: none"> <li>a. Teachers agreed that puberty and menstruation teaching in the classroom had a significant impact on students' perceptions and preparedness. They discovered that the training and instructional suggestions they were given were great resources for having productive conversations with kids.</li> <li>b. Programs for puberty and menstruation education offered in schools but not included in the national curriculum may face challenges in the long run due to pressure from the community and school officials.</li> </ul>
A3	Menstrual health education in Australian schools (Curry <i>et al.</i> , 2023)	Australia	The goal of the study is to provide light on the limitations that some participants in Australian schools have	Qualitative	<ul style="list-style-type: none"> <li>a. A large sample of Australian teenage girls aged 13 to 25 was examined.</li> <li>b. Thematic data analysis was carried out utilizing Braun and Clarke's approach.</li> <li>c. A bottom-up approach was</li> </ul>	<ul style="list-style-type: none"> <li>a. Education about menstruation health has to be included in the HPE curriculum. This poll highlights the importance of the topics that need to be taught as well as the support that educators need to ensure that they can do so.</li> <li>b. It affects present educators and teacher preparation, highlighting the significance of effective professional development initiatives.</li> </ul>

No	Title/Authors /Year	Country	Aim of Study	Type of Research	Method	Result
			when it comes to menstrual health education.		employed, where theme selection is driven by real data rather than particular research objectives or notions (Castleberry & Nolen, 2018).Particular.	
A4	A qualitative study of adolescent girls' experiences of menarche and menstruation in rural Tamil Nadu, India (Gold-Watts <i>et al.</i> , 2020)	India	This study aims to explore teenage girls' menarche and menstruation experiences in rural Thirumalaikodi, Tamil Nadu, India.	Qualitative	<ol style="list-style-type: none"> <li>The local community's enthusiasm in Project SHINE led to the selection of two schools in the village of Thirumalaikodi to take part in this study.</li> <li>The sample consisted of ten teenage females in the ninth grade (average age: 14) from two schools in the rural Thirumalaikodi hamlet.</li> </ol>	The research indicates that menarche marks the start of the biological transition into adolescence as well as the establishment of gender roles by society standards. These gender norms produce, sustain, and perpetuate stigmatizing attitudes, beliefs, and behaviors that have an influence on how coping strategies are developed at home and in the school. The therapies have been modified to include two activities (school courses and extracurricular activities) that address misunderstandings and knowledge gaps.
A5	Monitoring Menstrual Health Knowledge: Awareness of Menstruation at Menarche as an Indicator. (Hennegan <i>et al.</i> , 2022)	Australia	This research intends to promote worldwide menstrual health programs and track progress using comprehensive metrics.	A Cross Sectional Study	<ol style="list-style-type: none"> <li>In this inquiry, we undertook a secondary examination of information from four studies to bolster the understanding of these indicators.</li> <li>The study included data from 421 female students in Magway, Myanmar, 537 female students in Soroti, Uganda, 1,359 female students in Netrokona, Bangladesh, and 599 adult women employed in Mukono, Uganda. At menarche, 34% of persons in Bangladesh and 84% of people in Myanmar were aware they were menstruation.</li> </ol>	<ol style="list-style-type: none"> <li>Our data qualitatively support the hypothesis that girls who learn about menstruation before menarche will feel more prepared and optimistic when it occurs. However, our quantitative findings indicate that information alone is insufficient to reduce guilt or worry.</li> <li>According to this study, girls who knew about menstruation when they reached menarche were more likely to go through it and felt more comfortable talking about it and handling it at school. Nonetheless, there were no notable variations among Ugandan students.</li> </ol>
A6	Structural model of factors relating to the health promotion behavior of reproductive health among Indonesian	Indonesia	The study investigates the factors related with reproductive health (RH) promotion activities among Indonesian teenagers..	A Cross Sectional Study	<ol style="list-style-type: none"> <li>The study involved 234 Surabaya junior high school students.</li> <li>Using a self-administered questionnaire, variables linked with health promotion in maintaining reproductive health practices were investigated. The questionnaire was constructed</li> </ol>	52.8% of the 108 participants were 14 years old, 78.7% were female, 98.2% were Muslim, 81.5% were Javanese, 89.8% were from households where the minimum wage in the area was not met, and 57.4% did not have access to knowledge on reproductive health. Every participant was a member of a nuclear family and lived with their parents. 98.8% of the 84 females had experienced a menstrual cycle. The men had all had nighttime discharges. This is the first study to assess the structural determinants of Indonesian youth reproductive health

No	Title/Authors /Year	Country	Aim of Study	Type of Research	Method	Result
	adolescents (Kholifah <i>et al.</i> , 2017)				utilizing the Empowerment Model (EM), which is based on self-efficacy, and the Health Promotion Model.	behavior maintenance.
A7	Age at menarche, reactions to menarche and attitudes towards menstruation among Mexican adolescent girls (Marván <i>et al.</i> , 2014)	Meksiko	The purpose of this study is to determine whether menarche timing, menarche experiences, and attitudes about menstruation are related among Mexican girls.	A Cross Sectional Study	<p>a. Mexican youth after menarche, ages 11 to 16.</p> <p>b. Mexican youths after menarche, ages 11 to 16.</p> <p>c. The Pearson chi-square test was used to investigate the relationship between groups (early, average, and late maturers) and questionnaire items on menstrual experiences.</p>	Menarches before the age of 11 are more likely to report not knowing what to do when they get their period ( $P < 0.01$ ), not feeling ready to start menstruating ( $P < 0.05$ ), and feeling the need to hide the fact that they were menstruating than the average adult (menarche at age 11 or 12) or those who mature late (menarche at age 13 or later). Early menarche was linked to increased anxiety, concern, and melancholy ( $P < 0.05$ ), as well as decreased peacefulness ( $P < 0.05$ ). They were also the most likely to have a closed attitude toward menstruation ( $P < 0.01$ ). Individuals who matured later had a more favorable view regarding menstruation than their peers ( $P < 0.01$ ).
A8	Menstrual knowledge, sociocultural restrictions, and barriers to menstrual hygiene management in Ghana: Evidence from a multi-method survey among adolescent schoolgirls and schoolboys (Mohammed & Larsen-Reindorf, 2020)	Ghana	The study aims to assess adolescent girls in rural areas' knowledge of menstruation, sociocultural constraints, and obstacles to managing menstrual hygiene in school settings.	A Cross Sectional Study	Based on a population of 387 teenage schoolgirls spread across five junior high schools, a 95% confidence interval, a 5% precision level, a 30% non-respondent rate, and a 57% prevalence of menstrual knowledge in a previous Ghana study, Cochran's correction formula for a finite population was used to estimate a sample size of 250.	53.6% of women did not know what the menstrual cycle was about overall. Most males knew what menstruation was and had heard of it; they frequently described it as "blood flow through a woman's vagina." Children cited "Vodafone," "Red Card," and "Palm Oil" as examples of how menstruation is portrayed in communities and schools. Inadequate information about menstruation was shielded by maternal education. Adolescents with parents who were illiterate had greater understanding about menstruation than adolescents with elementary, secondary, or higher education. Those who lived in homes without TVs or radios were more likely to be uninformed of the menstrual cycle than those who lived in families with these gadgets.
A9	Perceptions and practices related to menstruation and reproductive health in adolescent girls	Kerala, India	This study assesses the menstrual and reproductive health-related beliefs and behaviors of	A Cross Sectional Study	Aluva, a city in Kerala's Ernakulam district, is home to a CBSE school where this study was conducted. Girls in grades 9, 10, and 11 took part in this cross-sectional study, which was conducted in November and December 2019. This study used 100	Mothers provided the majority of the information on menstruation, which 89% of teenage girls knew about before to menarche. More over 70% of girls considered menstruation as a normal occurrence, and 99% utilized sanitary pads. Eighty percent of teenage girls with a positive outlook said they were not concerned about their periods. Of them, 54% were unaware of premenstrual syndrome. 40% of them found it difficult to talk

No	Title/Authors /Year	Country	Aim of Study	Type of Research	Method	Result
	in an urban population - A cross sectional study (Vinod & Kaimal, 2023)		teenage girls attending urban schools in Kochi, Kerala.		samples.	to their fathers or brothers about their periods. 87% of the females who adhered to proper menstrual hygiene had positive opinions about.
A10	Female Adolescents' Preparations, Knowledge, and Emotional Response toward Menarche: A Preliminary Study (Rizkia, Setyowati, Setyowati, <i>et al.</i> , 2019)	Indonesia	The goal of this study is to understand teenage girls' readiness and emotional responses to menarche.	Qualitative	Qualitative methods like focus group discussions (FGDs) and in-depth interviews are used in this study. Five adolescent girls participated in focus group discussions (FGDs) in a school context to gauge their readiness for and emotional responses to menarche.	After conducting in-depth group conversations with faculty Furthermore, of the fifty-six teenage female students, we discovered that just two had experienced menarche. The majority of menstrual information was given mostly within the context of Islamic law. Because they didn't fully comprehend the physiological reasons for menstruation, they experienced tension and anxiety throughout their first period. Additionally, they were not given any advice about preserving personal hygiene or reproductive health while menstruating. Furthermore, these children had never been taught anything about reproductive health. This situation arises because the majority of these women originate from low-income backgrounds and most of their fathers work in low-wage industries like construction, agriculture, and recycling. They reside in small communities where menarche is negatively impacted by malnutrition.

## Menilai Kualitas Artikel Dengan Critical Appraisal

In this exploratory evaluation, the study used Joanna Briggs Institute (JBI) techniques for both qualitative and quantitative research projects (Cross-Sectional), as the JBI assessment tools cover a wide variety of research kinds. The researchers classified the worth of articles according to the overall score acquired from critical appraisal outcomes. The goal is to assess the quality of the reviewed papers. Critical appraisal is used to methodically and quickly analyze the significance of an article and to change professionals in making critical healthcare decisions for following actions. (Al-Jundi & Sakka, 2017). Given the following limitations, researchers use critical assessment to identify the category or criteria of merit for each inquiry:

0: No answer (unanswered)

1: Answer narrated, but not implemented

2: Answer narrated, but unclear/incomplete

3: Answer narrated, complete and detailed

In the next step, researchers categorize the value

Based on the kind of study, experts have established the following total score thresholds:

**Table 3. Critical Appraisal Assessment Terms**

Research Method	Scale	Total Score Range	Grade	Category
Quantitative	0 = No	19-24	A	Excellent
	1 = Not conducted	9-18	B	Good
	2 = Unclear	≤ 8	C	Fair
	3 = Yes			
Qualitative	0 = No	21-30	A	Excellent
	1 = Not conducted	11-20	B	Good
	2 = Unclear	≤ 10	C	Fair
	3 = Yes			

**Tabel 4. JBI Critical Appraisal Cross-Sectional Study**

No	Question items	No item				
		A5	A6	A7	A8	A9
1.	Were the criteria for inclusion in the sample clearly defined?	3	3	3	3	3
2.	Were the study subjects and the setting described in detail?	3	3	3	3	3
3.	Was the exposure measured in a valid and reliable way?	3	3	3	3	3
4.	Were objective, standard criteria used for measurement of the condition?	3	3	3	3	3
5.	Were confounding factors identified?	3	3	3	3	2
6.	Were strategies to deal with confounding factors stated?	3	3	3	3	2
7.	Were the outcomes measured in a valid and reliable way?	3	3	3	3	3
8.	Was appropriate statistical analysis used?	3	3	3	3	3
	Score	24/A	24/A	24/A	24/A	22/A

**Tabel 5. JBI Critical Appraisal Qualitative**

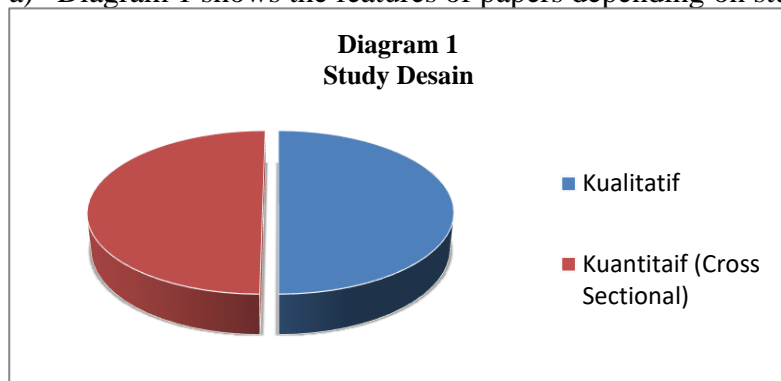
No	Question items	No item				
		A1	A2	A3	A4	A10
1.	Is there congruity between the stated philosophical perspective and the research methodology?	3	3	3	3	3
2.	Is there congruity between the research methodology and the research question or objectives?	3	3	3	3	3
3.	Is there congruity between the research methodology and the methods used to collect data?	3	3	3	3	3
4.	Is there congruity between the research methodology and the representation and analysis of data?	3	3	3	3	3
5.	Is there congruity between the research methodology and the interpretation of results?	3	3	3	3	3

6.	Is there a statement locating the researcher culturally or theoretically?	2	2	2	3	2
7.	Is the influence of the researcher on the research, and vice-versa, addressed?	2	2	2	2	2
8.	Are participants, and their voices, adequately represented?	3	3	3	3	3
9.	Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	3	3	3	3	2
10.	Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?	3	3	3	3	3
	Score	28/A	28/A	28/A	29/A	27/A

## RESULTS AND DISCUSSION

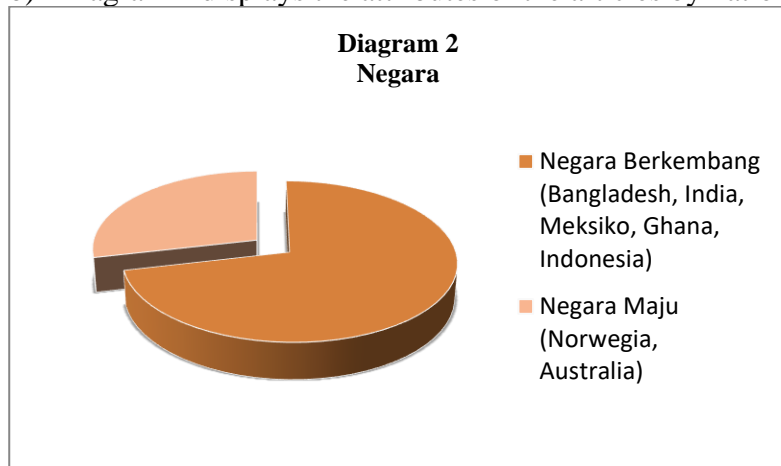
### Article Characteristics

a) Diagram 1 shows the features of papers depending on study design :



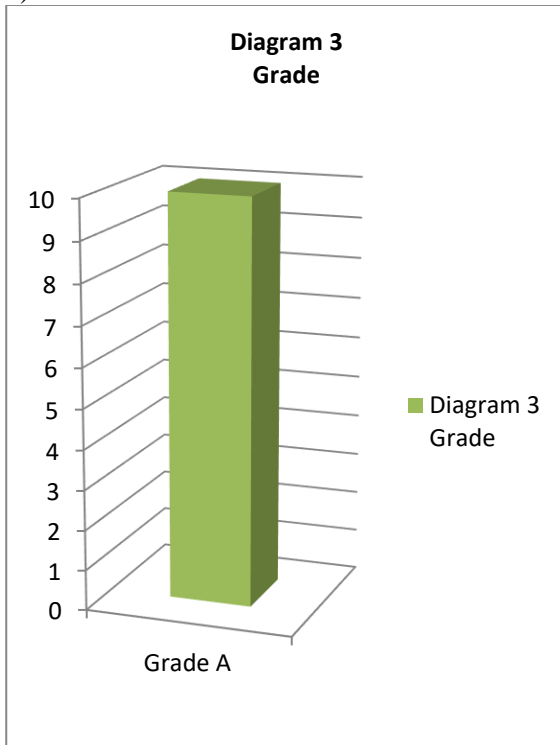
Five of the ten selected publications employed qualitative methods, while the other five used cross-sectional approaches.

b) Diagram 2 displays the attributes of the articles by nation :



This scoping review includes research publications from five impoverished countries: Bangladesh, India, Mexico, Ghana, and Indonesia, as well as two rich countries: Oslo, Norway, and Australia.

c) Chart 3 shows the features of the articles according to their quality :



This study's ten evaluated publications were all published in indexed journals. All of the chosen articles received an A quality score based on the gathered articles.

### Themes

Following data visualization and a review of the research papers' quality, themes emerged from the selected entries.

**Table 6. Analysis and Mapping of Research Article Themes**

No	Tema	Sub Tema	References
1.	Menarche Preparation Strategies for Children	Education	1. Reproductive health education in schools
			2. Reproductive health education at home
			3. Adolescent reproductive health services
2.	Barriers to Achieving Menstrual Preparedness	1. Limitations in discussing with family members	A2, A3, A4, A5, A6, A8
		2. Anxiety	A1, A5, A6, A8 A9, A10
		3. Lack of reproductive health education	A1, A2, A5, A6
		4. Family Income	A7, A9
3.	Sources of Information	1. Teacher/School	A4, A5, A7, A9, A10
		2. Parents/Family	A1, A3, A8, A10
		3. Peers	A5, A6, A8, A10

### Discussion

1. Menarche Preparation Education Strategies for Children
  - A. Reproductive health education in schools

Initial methods included consulting with teachers and principals to decide how to integrate health education for menarche preparedness in kids. Increasing knowledge in this field and training current educators to teach children about menstruation and puberty in-depth might be a more effective long-term development strategy. The value of delivering reproductive health education to children lies in their increased openness to share puberty-related problems with instructors and classmates. Viewing this as an extra advantage of the instruction provided by school instructors helps learners increase their knowledge while fostering discussion about menstrual requirements between teachers and students.(Mahfuz *et al.*, 2021).

Health and physical education instructors play an important role in providing necessary, evidence-based knowledge. The level to which this occurs in school education yet to be completely understood. (Roux *et al.*, 2019). In primary school, girls should begin learning about menstruation and basic menstrual hygiene habits, since this aligns with previous studies dispelling stereotypes around the period. Menstruation education in schools requires teachers to have the right resources and to understand the menstrual cycle inside and out. The menstrual cycle and techniques for supporting women and girls during their monthly periods should be covered in menstruation education curriculum in schools.(Mohammed & Larsen-Reindorf, 2020).

Instructors recommended that the national curriculum and required study materials incorporate comprehensive understanding of puberty and menstruation, as determined by our research. This would save them time when teaching the lesson.(Sommer *et al.*, 2015). Many girls cited the school team as their major source of knowledge and menstruation preparedness. For some girls, knowledge on menstruation is included in their health education curriculum between grades seven and nine, ages 13-15.(Ghandour *et al.*, 2022b).

## **B. Reproductive health education at home**

Adolescent girls undergoing menstrual preparedness training have mostly received instruction on cleanliness and practical matters; biological facts, proper emotional support, or the psychological importance of menstruation have received less emphasis. When asked to explain the information given, the majority of girls noted practical obstacles, even though the majority of them indicated that their mothers had supplied them with enough knowledge regarding menstruation during menarche. Providing exact, age-appropriate, and correct information is crucial. Parents should ensure that their children learn about the body, menstruation, reproduction, contraception, and other reproductive health issues.(Ghandour *et al.*, 2022). Adolescent reproductive health education should be supplemented with parental assistance to ensure that parents at home apply what they have learned. Parental monitoring is necessary to protect teenagers from harmful social media exposure.(Aprillia & Astuti, 2022).

Mothers give care by offering practical assistance and exposing some of the social effects of menarche. The majority of adolescent girls reported receiving emotional support from their moms or other female relatives during menarche. Mothers attempt to soothe the daughters and normalize the situation. This mental support allows adolescent girls to accept what is going on with their bodies and learn what to expect during menstruation.(Armour *et al.*, 2020). This is consistent with earlier studies showing that parental interaction with children is a type of parental participation in protecting teenagers from bad information. Thus, it must be founded on parental awareness, proper parental knowledge, and favorable parental attitudes regarding reproductive and sexual health concerns. Parents are stated to be the control center in creating an adolescent's behavior, requiring knowledge and abilities in interaction to enable good parent-adolescent communication.(Othman *et al.*, 2020).

## **C. Adolescent reproductive health services**

Reproductive health education for adolescents is an integral part of reproductive healthcare services. This activity is conducted to improve health status within the female reproductive health cycle. Therefore, it is a solid foundation for the team to implement education on adolescent

menstrual preparation. Menstruation is a focal point for adolescent girls in transition, eliciting a variety of reactions. Not all girls receive information about the menstrual process and health during menstruation. Adolescents who are unprepared and experience early menarche tend to show more negative reactions. It is essential to prepare adolescent girls for menstruation by providing accurate information about menstruation and menstrual health issues so they can recognize menstrual disorders and adopt responsible attitudes and behaviors toward their reproductive health (Ghandour *et al.*, 2022).

Providing health education to young adolescents is crucial. This effort is highly potential as parents seldom provide reproductive health education at the onset of adolescence. Health education for adolescent targets conveys information to individuals or groups about unknown aspects, offering a more detailed and comprehensive understanding of menstruation. Once the target adolescents learn about previously unknown information, they will appear more prepared for new experiences they have never encountered (Kholifah *et al.*, 2017).

This is consistent with a recent study that found that people feel encouraged to take care of their own health and improve it by the health-promoting activities of medical specialists. Encouragement of communities to take responsibility for their health-related behaviors and lifestyles is the aim of health promotion. Video communications are also more effective at describing processes, overcoming geographical and temporal constraints, seeming more realistic and reproducible, and leaving a lasting impression. This makes the knowledge received last longer in pupils' memory. (Kristianingrum *et al.*, 2022).

## **2. Limitations in discussing with family members**

### **A. Limitations in discussing with family members**

Negative attitudes, repulsion, and certain norms make it difficult for women to express themselves and relate their menstruation experiences with their fathers or brothers. Furthermore, Islamic law restricts sexual contact between specific family members, especially blood relatives, limiting women from being near to their dads or brothers during menstruation. (Shah *et al.*, 2019). Most youngsters hide their condition during menstruation due to shame, especially around siblings, dads, or male peers. (Vinod & Kaimal, 2023).

There is a dearth of parental understanding about the necessity of giving reproductive health education at a young age. The family is the major source of knowledge for children in terms of sexual education, thus parents must be conscious of their responsibility. Besides offering reproductive health education, some parents need to educate their children with knowledge of what is acceptable and what is not in order to avoid harmful circumstances. (Anggreni, 2022). Previous studies have demonstrated that parents encounter difficulties as a result of misinformation and ignorance about reproductive health, discomfort or insecurity when talking about these subjects, and an underestimation of their child's readiness to talk about reproductive health because they think they are too young (Toru *et al.*, 2022).

### **B. Anxiety, Worry, and Fear**

Girls are barred from participating in religious activities when menstruating, and abstaining from religious behaviors is a common limitation among student replies. Menstruation and its management are discouraged, and females are stigmatized as disgusting and unclean throughout their menstrual cycle. Similarly, two-thirds of survey respondents reported being unprepared for menstruation and menstrual hygiene during menarche, claiming difficulties, worry, and embarrassment. This demonstrates how youth are discouraged from seeking parents and school for proper information on suitable menstrual hygiene management practices owing to the shame, secrecy, and humiliation associated with menstruation. This might lead to adolescent girls knowing very little about their periods and how to take care of them when they get older. (Shah *et al.*, 2019).

According to one study, more than 34% of female instructors and 83% of male lecturers felt uncomfortable discussing menstruation-related topics. (Marván & Alcalá-Herrera, 2014).

### **C. Lack of reproductive health education**

Menstruation is seen as unpleasant since it is a part of reproduction and so related to sex. Since it goes against adult beliefs, many parents and educators find it awkward and challenging to have a conversation with their kids or teens. As a result, they usually attempt to keep them hidden from such knowledge. Furthermore, the value of knowledge is determined by culture and religious convictions. Therefore, extensive instruction for minority groups who are nearing menarche earlier in life may provide other students in the class with too mature material, particularly if physical and emotional development as well as the capacity to handle such knowledge are deemed superfluous (Curry *et al.*, 2023). However, negligence at these early phases causes issues by neglecting to offer the required knowledge and assistance to the younger generation, who may require it the most. Adolescents continue to confront several challenges to receiving information and reproductive health treatments. Several aspects that impede the optimization of health service access include lack of facilities to provide reproductive health services such as infrastructure and media limitations, costs unaffordable to adolescents, unfriendly staff, lack of confidentiality and privacy in service provision, socio-cultural issues, and poorly coordinated government policies. (Rokhmah *et al.*, 2022).

According to one survey, more than 34% of female professors and 83% of male lecturers were uncomfortable discussing menstruation-related subjects. (Duffy *et al.*, 2014). The majority of high school teachers are men, which might make teaching this subject difficult. The topic's intricacy and unpleasantness appear to influence how it is taught, with some teachers completely neglecting it. This is owing to a lack of a thorough grasp of the issue beyond biology, as well as a lack of professional development to improve teachers' skills. This combination of circumstances hampers the implementation of the menstrual health education curriculum. (Gold-Watts *et al.*, 2020).

### **D. Family Income**

Household wealth at the time of the study was linked to greater levels of education and a better awareness of menarche among adult women working in Mukono, Uganda. The lack of correlation between women's ages and menarche consciousness levels indicates that awareness levels have remained constant over time. (Hennegan *et al.*, 2022). Families with earnings below the area minimum wage have limited access to reproductive health information (Kholifah *et al.*, 2017).

Most teenagers don't completely comprehend the physiological mechanics of menstruation, which causes worry and anxiety when they experience it for the first time. They also lack knowledge about managing reproductive health and personal cleanliness when menstruating. This scenario is largely owing to most girls originating from low socio-economic homes, with their dads working in low-income industries including agriculture, construction, and recycling. They haven't heard about menstruation from lecturers, moms, or religious teachers, and very infrequently from health-care specialists. Their dietary intake in little communities has a detrimental influence on menarche. (Rizkia *et al.*, 2019).

## **3. Sources of Information**

### **A. Teacher/School**

Educators and educational institutions offer knowledge on a range of subjects, such as the physical and psychological shifts that accompany menarche, what constitutes a typical menstrual cycle, the appropriate use of sanitary pads or tampons during the period, the significance of maintaining a clean intimate area to avoid infections, and the distinction between menstrual disorders and regular menstruation. (Chandra-Mouli, 2017). School-aged girls need to know about female reproductive organs, physical changes that occur before menarche, how to keep the genital area clean before and after menstruation, and the consequences of failing to maintain reproductive organ health. To improve knowledge and attitudes among school-aged children, education about reproduction is necessary to prevent adverse consequences when facing menarche, such as anxiety

about physical and psychological changes and confusion about maintaining hygiene during the first menstruation, which affects the health of their reproductive organs.(Kelly & Gahagan, 2017).

### **B. Parents/Family**

The majority of knowledge on preparing teenage girls for menstruation centers on hygiene and pragmatic aspects; occasionally, biological knowledge, suitable emotional support, and the psychological relevance of menstruation are overlooked. Even though most girls said their mothers informed them about menstruation during menarche, most of them mentioned practical difficulties when asked to elaborate. This typically involves menstrual hygiene, such as using and discarding sanitary pads and body washing, as well as religious and societal limitations, such as not fasting or praying during menstruation and keeping menstruation private.(Marlina *et al.*, 2018).

Mothers try to calm down their daughters and normalize the situation. This emotional support helps adolescent girls comprehend what's going on with their bodies and what to expect throughout menstruation.(Ghandour *et al.*, 2022). Mothers play a significant role in fostering communication with their children. Mother-child communication involves face-to-face sending and receiving messages with intent, where both alternate roles as speaker and listener. Information provided includes the biological process of menstruation, hygiene during menstruation, and emotional and psychological support(Jimoh-Mohammed Saka, 2023).

This is consistent with previous research indicating that adolescent knowledge can influence behavior. Thus, those informed about reproductive health are likely to exhibit positive behavior. However, certain factors may cause someone to behave negatively despite having good knowledge. Here, the involvement of parents and religion is indivisible, as they are interrelated(Suharti & Surmiasih, 2016).

### **C. Peers**

Adolescents aged 10-16 often establish cooperative relationships among peers with positive goals. Through peer interactions, they can exchange experiences on what they have faced, such as dealing with their first menstruation. Most adolescent girls reported that they received emotional support from their close female friends during menarche(Lutfiasari, 2016). The information shared by peers sometimes allows students to take the provided information less seriously in their learning(Solehati *et al.*, 2018). This research aligns with previous studies that discussions and knowledge about sex circulate among close friends, colleagues, or playmates, and sexual issues are never openly discussed within families and the general Javanese community, even though conversations often include sex jokes. Close friends or peers play an essential role in disseminating information about reproductive health, so if parents find it challenging to provide reproductive education at home (considered taboo), adolescent reproductive health education can be conducted through peer education(Qudsyi, 2015).

### **Study Limitations**

This research was done as a review, mapping several existing papers without engaging in primary research.

### **Conclusion and Recommendations**

The most successful technique for menarche preparation education is reproductive health education in schools, which involves teachers and administrators in conducting menstruation programs and establishing an environment in which students feel comfortable addressing the subject. Accurate information may help girls value their bodies, feel better about physiological processes and changes, and recognize biological and psychological needs. Families, healthcare professionals, and educational institutions should work together to ensure that girls receive adequate, timely, and comprehensive menstruation preparation so they may safely and joyfully enter adulthood and lead healthy reproductive lives. Adolescent reproductive health care techniques must be improved to

ensure that they obtain accurate and trustworthy reproductive health information, including preparation for menarche and menstruation. Adolescents who find it difficult to address reproductive health with family members should also be supported. Furthermore, measures to address fear and limits in reproductive health education must be created, so teenagers are better prepared for menstruation with a deeper knowledge.

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Because the authors only reviewed and assessed papers that were available in databases, ethical considerations were not taken into account.

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The authors state that at the time of writing and publishing, they were free of any conflicts of interest.

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