

A Profile of Reproductive Health Awareness Character among Early Adolescents in Primary Education in Bandung City

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Abstract. Reproductive health issues among adolescent girls are a global concern, particularly during early adolescence, a critical phase that significantly influences the quality of future generations. This study aimed to identify changes in growth, development, and knowledge related to reproductive health among girls aged 9–12 years, a period classified as early adolescence. The study employed a quantitative approach with a cross-sectional design. A total of 263 adolescent girls were selected using purposive sampling. The findings revealed that 52.47% of the participants were categorized as underweight, indicating nutritional problems that may have serious implications for reproductive health. Adolescent girls with poor nutritional status are at risk of reproductive function disorders, including irregular menstrual cycles and reduced reproductive health quality. In the long term, this condition may increase the likelihood of giving birth to babies with low birth weight (LBW), a significant factor contributing to stunting in the next generation. These findings highlight the urgent need for multidisciplinary interventions, including reproductive health education at the primary education level, to foster awareness and concern for reproductive health. Developing caring character and promoting reproductive health awareness among adolescent girls are vital as part of a long-term investment in sustainable national development.

Keywords: Adolescent Girls; Caring Character; Health Education; Physical, Psychological, and Social Changes; Reproductive Health.

1. Introduction

Adolescent reproductive health is a pressing global issue that continues to be neglected despite its profound implications for the well-being of young people (Desrosiers et al., 2020; Morris & Rushwan, 2015). Since the International Conference on Population and Development in 1994, adolescents have continued to face disproportionate threats to their sexual and reproductive health (Mahy et al., 2021; Stover et al., 2021). In Sub-Saharan Africa, four out of five new HIV infections among adolescents aged 15–19 occur among girls. Moreover, surveys conducted from 2011 to 2016 revealed that 40% of women in Sub-Saharan Africa and 30% in South Asia were married before the age of 18, with many reporting early pregnancies (George et al., 2020). In Indonesia, child marriage and adolescent pregnancy are closely interlinked. Approximately one in nine women aged 20–24 years was married before the age of 18, with two-thirds experiencing pregnancy before reaching adulthood. This places Indonesia among the countries with the highest number of births among individuals aged 15–19 in Southeast Asia (Ayuandini et al., 2023).

The complexities of adolescent reproductive health are driven by multiple factors, including inadequate education, poverty, gender-based violence, and limited access to health services. These factors contribute to early marriage, risky sexual behavior, and increased vulnerability to HIV infection (Grose et al., 2021; Melesse et al., 2020).

Another critical issue faced by adolescents is the lack of attention to personal hygiene and limited knowledge of the physical and psychological changes that occur during adolescence. This low level of knowledge is influenced by various factors, including socio-demographic conditions, limited parental knowledge, and socioeconomic background (Chandra-Mouli & Patel, 2020; Mohammed & Larsen-Reindorf, 2020). To address this issue, routine health education initiatives are essential to enhance adolescents' awareness and understanding of the importance of maintaining personal health. This can be achieved through the integration of a comprehensive health education curriculum into school programs (Marcinkowska & Kiettyka, 2024).

The importance of reproductive health education for early adolescents cannot be overstated, as they are in a transitional phase marked by significant physical, psychological, and social changes. At this age, adolescent girls are often at risk of violence and sexual exploitation due to their dependence, lack of empowerment, and limited participation in decision-making processes. Moreover, their limited life experience makes it difficult for them to recognize the sexual nature of abusive or exploitative actions (Desrosiers et al., 2020; Goulart et al., 2021; Jennings et al., 2019). Without adequate understanding of the physical and psychological changes occurring during this period, adolescents are at risk of experiencing various negative outcomes, including depression, anxiety, low self-esteem, and other detrimental health behaviors (Neil-Sztramko et al., 2021; Pierce et al., 2022).

Comprehensive sex education is one of the most critical tools for providing young people with the knowledge they need to make informed decisions. However, sex education is often considered a sensitive issue due to the intimate and personal nature of the topic (Nguyen & Nguyen, 2023). Adolescents also begin to develop abstract thinking, enabling them to plan for their future. Experimentation and risk-taking are typical during this period and are part of the process of developing decision-making skills. Adolescents are influenced both positively and negatively by peers they respect and admire. In this context, adults play a crucial role in helping adolescents consider the consequences of their behaviors and guiding them in identifying various options for their decisions.

Addressing this issue requires collaborative efforts across the health, education, and community sectors. Ensuring optimal adolescent health represents a critical long-term investment in a nation's development. This encompasses not only physical well-being but also psychological and social health, enabling adolescents to realize their full potential as individuals and active contributors to society.

1.1. Problem Statement

In recent years, global efforts have intensified to improve adolescents' access to reproductive health services. In Indonesia, several policies have been implemented to improve access to such services. However, significant challenges persist, including anemia, sexual violence, risky sexual behaviors, and adolescent pregnancy (Budiarti et al., 2020; Handayani et al., 2019). Globally, limited access to reproductive health services among adolescents contributes to approximately 10 million unintended pregnancies annually among girls aged 15–19 years in developing countries. These pregnancies often lead to complications such as eclampsia, postpartum endometritis, and systemic infections, with adolescent mothers facing higher risks than women aged 20–24 years. To cope with unintended pregnancies, many adolescents resort to abortion, which is often performed under unsafe conditions. According to the World Health Organization (2017), of the estimated 5.6 million abortions each year among girls aged 15–19 years, approximately 3.9 million are unsafe, making pregnancy-related complications a leading cause of death among adolescent girls.

While these statistics focus on adolescents aged 15–19 years, the root of the problem often lies in the lack of comprehensive education during early adolescence. The 9–12 age group, which marks the onset of puberty, is a critical period for introducing reproductive health education. During this stage, children begin experiencing physical and psychological changes without adequate knowledge or tools to understand them. Providing early, age-appropriate education can reduce risky behavior later in adolescence and support informed decision-

making. Recent studies emphasize the importance of collaboration between primary education institutions and healthcare professionals in designing school-based reproductive health programs, particularly for girls (Febristi, 2020). Beyond reproductive health education alone, it is essential to instill healthy habits from an early age. These practices include fulfilling nutritional needs, understanding reproductive anatomy and function, maintaining reproductive health, and preventing sexual violence.

The novelty of this research lies in the development of a phased framework for cultivating what the researchers define as a "Caring Character" toward reproductive health. This concept is introduced as a set of internalized values and attitudes designed to foster empathy, responsibility, and self-respect among adolescents in the context of reproductive health. The components that form the basis of this Caring Character framework are adapted from previous studies by Gunawan (2022) and Siskayanti and Chastanti (2022), which emphasize empathy, mutual respect, and responsibility in human interactions. While these earlier studies inform the value dimensions, the formulation, integration, and application of these values into a structured character-building framework represent a novel contribution of this research.

In the context of reproductive health awareness among adolescent girls, the development of Caring Character is intrinsically linked to their overall well-being. This character can be cultivated through both formal and informal educational methods, supported by families and community-based social activities. Although no prior studies have specifically focused on developing a Caring Character framework for reproductive health, our research team has begun preliminary efforts by collecting baseline data on adolescent growth, development, and reproductive health knowledge, focusing particularly on girls as a priority group.

1.2. Related Research

Recent studies emphasize the need for cross-sectoral collaboration, particularly between basic education institutions and health professionals, to integrate reproductive health education into early educational settings, especially for adolescent girls. According to the World Health Organization's definition of adolescence, as cited in Febristi (2020), this developmental stage is categorized into early, middle, and late adolescence. Reproductive health education should ideally be introduced during early adolescence, when significant physical and psychological changes begin to occur (Gani, 2020). However, education alone is not sufficient. Habituating healthy behaviors, such as fulfilling nutritional needs, understanding reproductive anatomy, maintaining reproductive hygiene, and preventing sexual violence, is equally crucial.

The novelty of this study lies in the development of a phased framework aimed at cultivating what the researchers define as Caring Character, a set of internalized values designed to foster empathy, responsibility, and self-respect among adolescents in the context of reproductive health. This framework builds on value dimensions identified in previous studies, such as empathy, mutual respect, and responsibility, but offers a novel integration of these values into a structured character-building model (Gunawan, 2022; Siskayanti & Chastanti, 2022).

Preliminary efforts have been made by the research team to collect baseline data on adolescent growth, development, and reproductive health knowledge, with girls as the priority group. This focus is important because issues such as early marriage, gender-based violence, sexually transmitted infections, and limited access to healthcare disproportionately affect adolescent girls (George et al., 2020).

The implementation of character education can be integrated into educational curricula because character plays a vital role in shaping students' future attitudes, behaviors, and decision-making. Efforts to enhance public awareness, particularly among adolescent girls, are expected to have a significant impact on their future health (Siskayanti & Chastanti, 2022). Based on common issues encountered during early adolescence, the development of Caring Character with a focus on reproductive health should be undertaken through a thorough needs analysis.

Drawing on Maslow's theory of self-actualization, character development in adolescence, which is marked by curiosity, the need for appreciation, and the need for belonging, requires nurturing environments that support autonomy, responsibility, and open communication (Kelly & Williams, 2020; Newman & Newman, 2020). Therefore, fostering self-awareness and communication skills is crucial to preventing reproductive health problems and empowering adolescent girls to make informed decisions.

1.3. Research Objectives

The general objective of this study is to examine the distribution of growth and developmental changes among early adolescent girls. This objective is important because previous studies have shown that limited knowledge of reproductive health may lead to health problems among adolescent girls, with potential long-term consequences.

The research questions are as follows:

1. To what extent do early adolescents understand their nutritional needs?
2. Do early adolescents have knowledge of their reproductive organs?
3. Are early adolescents aware of their physical and psychological changes?
4. Do early adolescents have knowledge of personal hygiene related to reproductive health?
5. How can the development of caring character for reproductive health be effectively implemented in basic education?

2. Theoretical Framework

2.1. The Concept of Adolescent Reproductive Health

International human rights agreements require both international and national laws to protect women's rights. These rights include freedom from discrimination, personal security, rights within marriage and family life, access to information and education, access to healthcare services, and the benefits of scientific progress. However, challenges remain in applying human rights law to address neglected issues in women's reproductive health. Treaty bodies, such as the Human Rights Committee, can accept petitions from individuals who claim that governments have violated these agreements. One of the most evident violations is preventable maternal death, which directly affects a woman's right to life (Cook & Dickens, 2012).

Adolescents aged 10–19 years are entitled to the same reproductive rights. This stage involves major physical, emotional, and cognitive changes that have long-term implications for reproductive health (Uhawenimana et al., 2024). Adolescence is also a period in which gender norms begin to shape attitudes and behaviors that influence reproductive health in adulthood. For example, poor nutrition during this period can hinder pelvic growth and increase the risk of anemia and childbirth complications (Christian & Smith, 2018).

Findings by Oringanje et al. (2016) indicate the effectiveness of various approaches to improving adolescent sexual and reproductive health. Reviews of prevention programs implemented in schools, communities, families, clinics, and religious settings also support these findings. However, evidence of their impact on outcomes such as the timing of sexual initiation, contraceptive use, abortion, childbirth, and sexually transmitted infections (STIs) remains inconclusive (Lameiras-Fernández et al., 2021). These findings emphasize that promoting adolescent reproductive health requires shared responsibility across society. Efforts led solely by healthcare professionals are insufficient to address the complexity of adolescent reproductive health challenges.

Various efforts to address reproductive health issues have been undertaken by the Indonesian government, including the issuance of Health Minister Regulation No. 61 of 2014 on reproductive health (Srihartini, 2020). In addition, the World Health Organization identifies three main factors that influence women's reproductive health. The first is biological differences, including anatomy, physiology, genetics, and immune system variations. The second is sociocultural differences, including roles and responsibilities, societal and familial norms,

community expectations, and adolescents' subjective identities. The third is access to resources and healthcare services, including economic, social, and political factors, as well as the availability and quality of services (Irwanto & Khairani, 2024). Moreover, barriers faced by adolescents in accessing reproductive healthcare services are also influenced by sociocultural conditions, customs and traditions, geographical location, and policy frameworks.

Given this complexity, reproductive health education should begin in primary school, where teachers play a vital role (Irwanto & Khairani, 2024). Collaboration between teachers and healthcare professionals in developing reproductive health modules has already been implemented and has proven to be effective.

2.2. Physical and Psychological Growth and Development of Adolescent Girls

In addition to understanding adolescent reproductive health and the efforts made to address related issues, adolescents need to recognize the importance of maintaining good health. This requires an understanding of the physical and developmental changes that occur during adolescence. When related to Abraham Maslow's hierarchy of needs, these developmental changes are closely connected to the fulfillment of basic human needs.

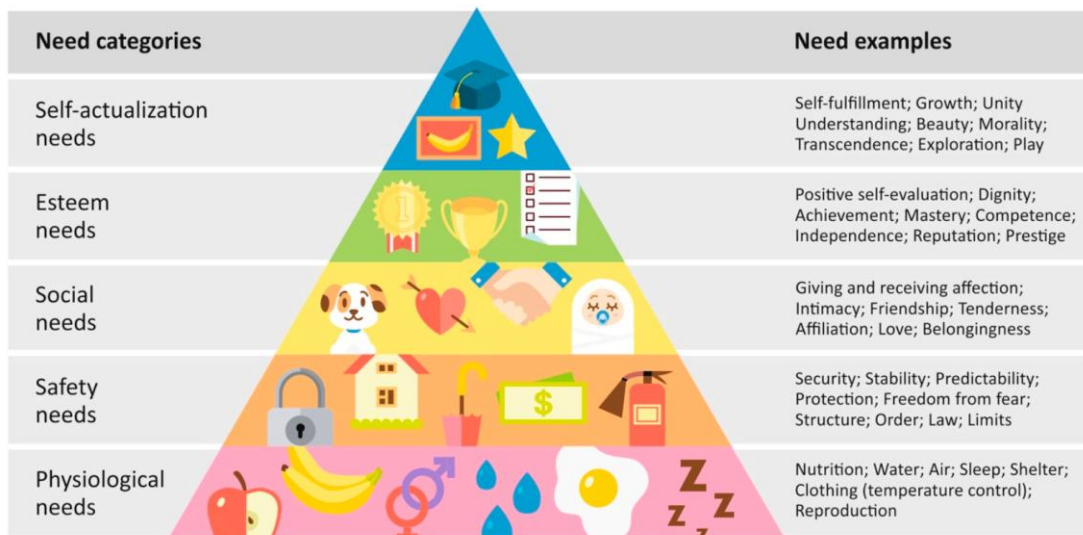


Figure 1. Maslow's Hierarchy of Needs

Source: Desmet and Fokkinga (2020)

Figure 1 illustrates that Maslow's hierarchy of needs consists of three broad categories: basic needs, psychological needs, and self-fulfillment needs. In relation to the growth and development of early adolescent girls, basic needs become the primary concern. Proper nutritional intake positively affects adolescents' physical growth and overall development. In addition, access to healthcare services, education, a supportive family environment, and a safe community environment are essential components of basic needs.

Psychological needs include social interaction, belonging, affection, and esteem. These needs involve the desire to love and be loved, to have caring friends, to develop romantic interests, and to receive recognition, trust, and validation. At the self-fulfillment level, adolescents begin to recognize their potential and develop confidence in themselves. This stage supports adolescents in becoming more self-assured individuals (Desmet & Fokkinga, 2020; Maslow, 1943; Noltemeyer et al., 2021; Wilde et al., 2023).

Knowledge of reproductive organs is crucial for adolescents. The growth and development experienced by adolescent girls include physical, cognitive, emotional, social, moral, and ethical development. In addition to these general developmental characteristics, adolescent girls undergo specific reproductive changes. These include enlargement of the ovaries and uterus, the onset of menstruation, changes in the vulva and vagina, the growth of fine hair in

the genital and underarm areas, breast development, pelvic widening, increases in height and weight, and changes in body fat distribution and hormone levels. These changes are closely related to the functions of the reproductive organs and their overall role in adolescents' physical and biological development (Chandra-Mouli et al., 2020; Finlay et al., 2020; George et al., 2020; Noltemeyer et al., 2021).

2.3. Reproductive Health Problems among Adolescent Girls

Previous studies have shown that many adolescent girls still have limited knowledge and experience regarding menstruation and menstrual hygiene. For example, mothers often serve as the primary source of information about menstruation, while many adolescents have never attended formal classes or educational sessions on menstrual health at school. Although some adolescents understand that menstruation is a physiological process and know that menstrual blood comes from the vagina, many still experience school absenteeism during menarche. The use of absorbent materials is common among adolescent girls, with many using commercially available sanitary pads. However, menstrual hygiene practices remain inconsistent, including practices related to bathing and genital hygiene during menstruation (Melesse et al., 2020; Michael et al., 2020). These findings indicate that adolescents may experience low self-confidence when facing reproductive changes. This issue is largely associated with limited understanding of reproductive organ changes, which may affect their self-efficacy.

Social and physiological factors also act as triggers for adolescent reproductive health problems. Many parents express concerns about the personal, social, and economic consequences of high-risk sexual behavior. This problem is often exacerbated by limited parental self-efficacy and prevailing cultural norms within the community where adolescents live. As a result, cultural and religious factors may create discomfort in parent-adolescent communication about sexual and reproductive health. Consequently, peers, media, teachers, and siblings often become preferred sources of sexual health information rather than parents (Usonwu et al., 2021).

Adolescence is a period of growth and development characterized by transformative changes with profound long-term implications. Nutritional issues, such as micronutrient deficiencies and food insecurity, continue to persist, while increasing rates of overweight and obesity also represent major concerns. Research on adolescent nutrition remains limited, and policies addressing adolescent nutrition are still not sufficiently responsive. Consequently, there is a lack of a comprehensive perspective on adolescent growth and development. Childhood and early adolescence are crucial stages that require proper nutritional intake because nutrition plays a formative role in regulating the timing and pattern of puberty. It also affects adult height, muscle and fat mass growth, and the risk of non-communicable diseases later in life. The impact of nutrition on adolescent development extends beyond musculoskeletal growth to include cardiorespiratory fitness, neural development, and immune function. High rates of teenage pregnancy in many countries continue to jeopardize the growth and nutritional health of adolescent girls, with long-lasting consequences for future generations. Adolescence is therefore a growth phase that is particularly sensitive to nutrition, as good nutrition benefits multiple physiological systems (Norris et al., 2022).

Nutrition serves as the energy source required to sustain bodily processes. A balanced diet consists of both macronutrients and micronutrients. "Nutritional deficiencies" refer to nutrient intake below the estimated average requirements, whereas "nutrient deficiencies" refer to critically low levels of one or more nutrients that prevent the body from functioning properly and increase the risk of various diseases, such as cancer, diabetes, and heart disease. Malnutrition can result from environmental factors, such as food scarcity, as well as medical conditions, such as anorexia nervosa and prolonged fasting (Kiani et al., 2022).

Anemia is another important reproductive health-related problem among adolescent girls. A deficiency in red blood cells may result in the inadequate fulfillment of physiological needs, which vary according to age. Iron deficiency is the most common factor contributing to anemia and can significantly affect physical function. Previous research has shown that

anemia is highly prevalent among adolescent girls, pregnant women, and preschool children. The same study also highlighted the influence of family and socioeconomic background, including parental education, employment status, family structure, and social class. These findings suggest that limited intervention and increasing nutritional challenges may worsen the health consequences associated with anemia and iron deficiency (NR, 2023). Another study on anemia prevalence among early adolescent girls found that anemia and stunting remain important concerns. These findings suggest that anemia during early adolescence may contribute to adverse health outcomes later in life, including potential risks during future pregnancy.

2.4. Caring Character in Reproductive Health

The development of Caring Character in reproductive health is essential for instilling awareness among adolescents about the importance of bodily health, which is closely linked to their growth and development. This awareness is expected to have a lasting impact as adolescents transition into adulthood.

Character education contributes to shaping students into a responsible and high-quality generation. It is a deliberate effort to instill moral values, virtues, and positive character traits that enhance students' ability to make decisions. Decision-making skills, however, are not acquired instantly. Early adolescence is therefore a critical period for instilling the value of care. In the Indonesian context, "caring" refers to the act of paying attention to, showing concern for, and taking responsibility for oneself and others. The essence of caring involves an individual's response to themselves and their surrounding environment.

Given the issues described above, the development of Caring Character in reproductive health can begin by introducing adolescents to their reproductive organs. This step is crucial because it aligns with the fundamental concept of education as a planned effort to raise individual awareness and enable learners to develop their potential in accordance with religious values, knowledge, intelligence, and life skills.

Understanding reproductive organs is part of fostering adolescents' cognitive, affective, and psychomotor development in relation to self-awareness. By becoming familiar with their bodies, adolescents are expected to care for themselves and recognize the value of health. This is closely related to character education, which aims to nurture holistic development in individuals.

Character education also contributes to students' personality development. A reproductive health-oriented caring character is shaped by the challenges adolescents face. For example, the implementation of social caring character, as discussed by Anastasya and Wulandari (2022), highlights the importance of social interaction, reciprocal relationships, and mutual responsibility. The indicators of social caring character include mutual assistance, empathy, tolerance, social action, and noble character. These dimensions serve as important guidelines for developing a socially caring character, emphasizing mutual aid, empathy, tolerance, peaceful coexistence, and social initiatives.

3. Method

3.1. Research Design

This study employed a quantitative approach with a cross-sectional research design. This design was selected because it enables researchers to examine issues relevant to early adolescents and describe population characteristics at a specific point in time (Cummings, 2018). Cross-sectional research involves examining individuals' responses to specific questions and requires careful consideration of representativeness, generalizability, sample size, sample reliability, inclusion criteria, and non-response bias. This method is particularly useful for assessing relatively large populations within a defined period.

In cross-sectional research, the sample size must be adequate and representative of the target population. Accurate population estimates, appropriate sampling procedures, and reliable

data collection are essential for determining an adequate sample size. Non-response bias is also a significant concern, especially when non-respondents differ from the study participants, as this may affect the validity of the findings.

3.2. Respondents

The sampling process was conducted using cluster sampling to determine regional divisions. The research area was Bandung City, which was divided into four regions: West Bandung, represented by SDN 099 Babakan Tarogong; East Bandung, represented by SDN 194 Sukajadi; North Bandung, represented by SDN 090 Cibiru; and South Bandung, represented by SDN 083 Babakan Surabaya. The participants were then selected using simple random sampling.

According to the available data, there were 17,103 female students enrolled in public elementary schools and 4,078 female students enrolled in private elementary schools in Bandung City. Based on the proportional calculation of female students in public elementary schools, the values were set as follows: $p = 0.807$, $q = 0.193$, and $z = 1.96$. With a margin of error of 5% or 0.05, these values were applied to the sample size formula, resulting in a minimum required sample size of 240 participants.

During the implementation process, a total of 263 respondents were obtained from public elementary schools representing each region. Data were collected simultaneously while adhering to the predetermined inclusion and exclusion criteria. Cross-sectional research is considered useful for analyzing and evaluating data within a specific period (Kesmodel, 2018).

The respondents in this study were early adolescent girls aged 10–12 years who were enrolled in public elementary schools in Bandung City. These participants were selected because adolescent girls face diverse reproductive health-related issues that may pose long-term risks not only for themselves but also for future generations.

3.3. Data Collection

The data used in this study consisted of primary data collected through questionnaires administered directly to respondents categorized as early adolescents aged 10–12 years. Before distributing the questionnaires, the researchers explained the purpose of the study to the respondents' parents. After parental consent was obtained, the questionnaires were distributed to the respondents with the assistance of teachers at each elementary school. The questionnaire completion process took approximately 15–30 minutes.

The questionnaire collected data on respondents' characteristics, including age, gender, birth order, number of siblings, place of residence, religion, ethnicity, parental education, parental occupation, and the growth and developmental changes experienced by the respondents.

For data collection, the respondents were gathered in a classroom at each elementary school. Before completing the questionnaire, the researchers explained the procedures that respondents needed to follow and clarified health-related terms. For example, the first menstrual period was explained as menarche, and the growth of fine hair in the underarm area and on the external genitalia was described as pubic hair. These explanations were provided to ensure that respondents understood the questionnaire items.

Respondents were then given the questionnaire forms. During the process, the research team, accompanied by teachers, conducted observations to address any misunderstandings or difficulties that respondents might encounter. In each participating elementary school, some respondents expressed confusion about questions related to menstruation, the growth of fine hair, and pelvic enlargement. This confusion was attributed to their limited understanding of the physical and psychological changes occurring in their bodies.

3.4. Data Analysis

The collected data were coded to assess the extent to which adolescents recognized the changes occurring in their bodies. Based on the coding results, patterns of growth and development among female adolescents were found to vary across respondents. During the questionnaire completion process, some respondents engaged in peer interactions, such as

teasing one another, asking about bra sizes, sharing information about sanitary pad brands, discussing grooming preferences, and engaging in other similar conversations.

These observations indicated that some adolescents felt insecure about their physical changes. The research team documented these reactions through field observations and notes because attitudes and behaviors could not be fully captured through questionnaire responses alone.

The findings were systematically organized using observation checklists for each school. An example of the observation checklist is presented in Table 1.

Table 1. Observation Checklist Sheet for Respondent Behavior

No	Physical Activity While Filling Out the Questionnaire	Number of Respondents
1.	Paying attention when given an explanation	
2.	Joking around while filling out the questionnaire <ol style="list-style-type: none"> a. teasing b. shy smile c. pinching d. laughing 	
3.	Asking because of not understanding the research team or teacher	
4.	Focusing on filling out the questionnaire	
5.	Looking confused with eye movements looking right and left, putting the head on the table, playing with a ballpoint or pencil, etc.	

The primary data collected in this study were expected to provide a realistic understanding of the issues faced by female adolescents. Such understanding can support the development of targeted solutions to reproductive health problems based on adolescents' specific needs rather than generalized assumptions. Addressing these problems requires collaborative efforts among relevant institutions.

Based on a review of articles and existing policies concerning adolescent reproductive health, the main challenges faced by early adolescents include limited knowledge of personal hygiene, menarche, and growth and developmental changes. Although healthcare professionals, particularly those focusing on adolescent health, have established policies and initiatives, progress remains uneven. Therefore, educational programs specifically addressing adolescent reproductive health need to be developed.

3.5. Validity and Reliability

The instrument used in this study had previously undergone validity and reliability testing with participants outside the selected sample who had similar characteristics. The validity and reliability tests were conducted on three sections of the questionnaire: (1) Early Adolescents' Growth, (2) Early Adolescents' Self-Development, and (3) Adolescents' Knowledge of Self-Care. Based on responses from 50 participants, most items were found to be valid, while four invalid items were eliminated. The reliability analysis revealed that all sections had Cronbach's alpha values above 0.70, namely 0.77, 0.83, and 0.73, respectively. These results indicate that the overall instrument was valid and reliable for use in this study.

4. Findings

The data presented below show the distribution of growth, development, and reproductive health knowledge among female adolescents. The results highlight patterns related to physical growth, early adolescent development, and respondents' understanding of reproductive health.

Table 2 presents an overview of respondents' perceptions and early experiences related to physical growth and reproductive health. It includes data on regular weight and height

monitoring, signs of puberty, such as menstruation, breast development, underarm and pubic hair growth, and pelvic changes, as well as knowledge of menarche. The table also captures emotional responses to physical changes and nutritional status based on anthropometric measurements. Overall, the findings reflect a gap between the biological changes experienced by respondents and their understanding of those changes, highlighting the need for early and comprehensive reproductive health education.

Table 2. Frequency Distribution of Growth and Early Adolescence

Variabel	Yes		No		Total	
	f	%	f	%	f	%
1. Do you regularly have your weight and height measured?	47	17,87	216	82,10	263	100
2. Have you already experienced menstruation?	131	49,81	132	50,19	263	100
3. Has your breast development already started?	253	96,20	10	3,80	263	100
4. Have you noticed the growth of underarm and pubic hair?	247	93,92	16	6,08	263	100
5. Have you noticed any pelvic enlargement?	239	90,87	24	9,13	263	100
6. Do you know the term <i>menarche</i> (the onset of menstruation)?	59	22,43	204	77,57	263	100
7. Have you ever experienced menstrual pain (<i>dysmenorrhea</i>)?	113	42,97	150	57,03	263	100
8. Have you experienced breast growth?	236	89,73	27	10,27	263	100
9. Are you embarrassed by your breast development?	174	66,2	89	33,8	263	100
10. Are you <i>embarrassed</i> by the growth of underarm and pubic hair?	180	68,44	69	26,24	263	100

Table 2 shows that most female adolescents in Bandung City had experienced several indicators of early physical growth and puberty. However, several important findings require attention. A total of 132 respondents, or 50.19%, had not yet experienced menstruation, while 204 respondents, or 77.57%, did not know the term *menarche*. This indicates that although many respondents had experienced physical signs of puberty, their conceptual understanding of reproductive development remained limited.

Understanding bodily changes is important because limited knowledge may contribute to low self-confidence in social interactions. This is reflected in the finding that 174 respondents, or 66.20%, felt embarrassed about breast development, while 180 respondents, or 68.44%, felt embarrassed about the growth of underarm and pubic hair. These findings suggest that physical changes during early adolescence may be accompanied by discomfort, embarrassment, and limited readiness to understand bodily development.

These data indicate ongoing challenges faced by female adolescents during the transition to puberty. Without adequate reproductive health education, such challenges may have long-term implications for their well-being, self-confidence, and social development as they mature into adulthood.

Table 3 presents the responses of elementary school girls regarding their self-perception, emotional experiences, and social interactions. The data highlight early signs of body image concerns, emotional responses to peer relationships, and patterns of communication with parents and peers, all of which are essential for understanding their psychosocial development.

Table 3. Frequency Distribution of Informants on Early Adolescent Development

Variabel	Yes		No		Total	
	f	%	f	%	f	%
1. Is your current height as you wish?	120	45,6	143	54,4	263	100
2. Is your current weight as you wish?	114	43,30	149	56,70	263	100
3. Do you currently like someone of the opposite gender?	186	70,70	77	29,30	263	100
4. If someone of the opposite gender expresses interest or affection towards you, would you feel proud and happy?	208	79,09	55	20,91	263	100
5. Have you ever felt proud because someone praised you as being smarter than your peers?	39	14,83	224	85,17	263	100
6. Do you feel that your parents love you very much?	254	96,58	9	3,42	263	100
7. Are you proud to be a girl?	258	98,10	5	1,90	263	100
8. Do you have self-confidence when you are better or more successful than your peers?	39	14,83	224	85,17	263	100
9. Do you always do your homework without parental assistance?	139	52,85	124	47,15	263	100
10. Do you share everything about your life openly with your parents?	184	69,96	79	30,04	263	100
11. When you face problems, feel upset, or happy, do you like sharing your feelings with friends?	162	61,60	101	38,40	263	100
12. Do you write your feelings of happiness or sadness in a book or diary?	124	47,15	139	52,85	263	100

Table 3 illustrates the developmental characteristics experienced by adolescents, particularly those related to body image, emotional responses, peer relationships, and communication patterns. The data show that many adolescents were dissatisfied with their physical condition. Specifically, 143 respondents, or 54.40%, reported that their current height did not meet their expectations, while 149 respondents, or 56.70%, reported dissatisfaction with their current weight. These findings require attention from parents, teachers, and healthcare professionals because prolonged dissatisfaction with physical changes may affect both physical and psychological well-being.

Additional data showed that, among 263 female adolescents, 138 respondents, or 52.47%, were categorized as having a low BMI. This finding highlights the need to address adolescent development comprehensively, particularly in relation to nutritional status, body image, and reproductive health awareness.

Challenges in adolescent development are also reflected in their self-confidence, self-actualization, and perceived parental support. Table 3 shows that 254 respondents, or 96.58%, felt strongly loved by their parents. However, only 39 respondents, or 14.83%, reported having self-confidence when they were better or more successful than their peers. This indicates that emotional support from parents does not automatically translate into self-confidence, suggesting the need for appropriate guidance during early adolescence.

In relation to Maslow's theory of self-actualization, these findings indicate the importance of supporting adolescents' needs for belonging, appreciation, autonomy, and self-expression (Maslow, 1943; Maslow, 1991). The data further show that adolescents were beginning to develop interest in the opposite gender, respond emotionally to peer attention, and select

trusted individuals with whom they could share their feelings. These factors require careful attention to help adolescents navigate the transition from childhood to adulthood effectively.

Table 4 presents the responses of elementary school girls regarding their knowledge and practices related to personal and reproductive hygiene. The data reflect respondents' hygiene behaviors, knowledge of menstrual care, and the extent of parental involvement in reproductive health education.

Table 4. Frequency Distribution of Adolescents' Knowledge of Self-Care

Variabel	Yes		No		Total	
	f	%	f	%	f	%
1. Do you know how to properly clean your body (bathing, washing hair, washing after urination or defecation, changing clothes, changing underwear, and changing sanitary pads)?	154	58,56	109	41,44	263	100
2. Do you know how to use a sanitary pad correctly?	154	58,56	109	41,44	263	100
3. Did your parents teach you how to wash yourself after urination or defecation?	221	84,03	42	15,97	263	100
11. Do you know how to clean yourself during menstruation?	61	23,19	202	76,80	263	100
12. Did your parents teach you how to clean yourself during menstruation?	97	36,88	166	63,12	263	100
13. Do you know how to change underwear properly throughout the day?	220	83,65	43	16,35	263	100
14. Did your parents teach you the frequency of changing underwear?	127	48,29	136	51,71	263	100
15. Did your parents teach you how to wear a bra or mini-set?	226	85,93	37	14,07	263	100
16. Should adolescent girls with developed breasts wear a mini-set?	139	52,85	124	47,15	263	100
17. Do you know how often mini-sets or bras should be changed?	207	78,71	56	21,29	263	100
18. Is it allowed to shave pubic hair?	96	36,50	167	63,50	263	100
19. Do you know how to shave pubic hair correctly?	16	6,08	247	93,9	263	100
20. Do you prefer washing the genital area with soap?	177	67,30	86	32,70	263	100
21. If you experience reproductive health problems such as menstrual pain or discharge, do your parents always take you to a healthcare facility?	54	20,53	209	79,47	263	100

Table 4 illustrates adolescents' knowledge and practices related to self-care and reproductive hygiene. The findings show that 154 respondents, or 58.56%, knew how to clean their bodies properly and how to use sanitary pads correctly. However, only 61 respondents, or 23.19%, knew how to clean themselves during menstruation, while 202 respondents, or 76.80%, did not have this knowledge. This indicates a substantial gap in menstrual hygiene knowledge among early adolescent girls.

The role of parents was evident in several aspects of self-care education. A total of 221 respondents, or 84.03%, reported that their parents had taught them how to wash after urination or defecation. However, only 97 respondents, or 36.88%, reported that their parents had taught them how to clean themselves during menstruation. Similarly, 127 respondents, or 48.29%, stated that their parents had taught them how often underwear should be changed.

These findings suggest that parental involvement in general hygiene education was stronger than parental involvement in menstrual and reproductive hygiene education.

The data also show limited knowledge regarding specific reproductive hygiene practices. Only 16 respondents, or 6.08%, knew how to shave pubic hair correctly, while 247 respondents, or 93.90%, did not. In addition, only 54 respondents, or 20.53%, reported that their parents would take them to a healthcare facility when they experienced reproductive health problems such as menstrual pain or discharge. These findings highlight the need for early, accurate, and age-appropriate reproductive health education involving parents, teachers, and healthcare professionals.

5. Discussion

Adolescent growth and development play a crucial role in shaping future national well-being. Current reproductive health challenges require urgent collective action, particularly because adolescent girls are an important group whose health has long-term implications for future generations. Many reproductive health issues arise from limited knowledge and awareness of health, and these issues are influenced by various individual, social, cultural, and institutional factors.

Government policies on reproductive health have been in place since 2014, including programs such as adolescent peer educators, Youth Information and Counseling Centers, and Generation Planning. However, adolescents' knowledge and awareness of reproductive health remain areas requiring focused attention. This is reflected in the findings related to adolescent growth, development, and reproductive health knowledge, as discussed below.

5.1. Growth among Adolescent Girls

Efforts to improve knowledge of reproductive organs among early adolescents are highly important. Such efforts can raise adolescents' awareness of reproductive organ development and help them understand the physical changes they experience during puberty. This aligns with research by Utomo & Nurfadhilah (2023), which emphasizes that puberty education should be integrated with the reinforcement of five core values: religiosity, nationalism, independence, cooperation, and integrity. Despite this, previous findings indicate that teachers still perceive students' knowledge and behavior regarding puberty, including physical and psychological changes during adolescence, as problematic in primary education.

This issue is also comparable to adolescent reproductive health challenges in Latin America, including sexually transmitted infections, which require innovative and culturally based health promotion strategies for reproductive health education. Research by Wang and Singhal (2016) shows that, despite challenges in achieving complete intervention through digital platforms, East Los High successfully contributed to teenage pregnancy prevention and improved sexual and reproductive health outcomes. Their study provides a useful foundation for collaborative program evaluation and has implications for designing sexual and reproductive health interventions targeting young people.

Furthermore, physical changes during adolescent growth may contribute to identity-related challenges, which are common during adolescence. This highlights the need for counseling, community engagement, and mentoring strategies that can be adapted to the unique characteristics of each adolescent (Pasaribu & Novalina, 2023).

The discussion above indicates that knowledge provision, counseling, attention to environmental conditions, and structured guidance can influence adolescents' understanding and behavior regarding the physical changes they experience. These aspects are closely related to adolescent development, which is further discussed in Section 5.2.

5.2. Development of Adolescent Girls

Early adolescence plays a critical role in shaping later developmental trajectories. Adolescence is a critical developmental stage marked by increasing sensitivity to peer acceptance and rejection, alongside the development of self-concept, identity exploration, and future orientation (Crone et al., 2022; Stone et al., 2016). Similarly, Suryana et al. (2022) highlight that this phase is highly sensitive because adolescents undergo adjustments in physical, intellectual, emotional, social, moral, and religious domains.

The findings of this study indicate that early adolescents are often curious about the changes occurring in their bodies. At this stage, they begin to develop new ways of thinking and may become attracted to the opposite gender. To support their developmental adaptation, it is important to provide appropriate knowledge and involve educators in helping adolescents reach their optimal potential.

Previous studies have emphasized that education serves as a foundation for addressing adolescents' developmental needs. Education helps adolescents respond to challenges and supports the formation of character. During this period, adolescents may also face educational problems, such as school dropout risks, which can be addressed through life skills training. Such training may include personal-social guidance, mental guidance, religious guidance, health education, youth development, discipline training, and skill development. These efforts aim to enhance adolescents' life skills (Larasati & Kurniasari, 2022).

Moreover, developmental changes in adolescence require the involvement of adolescents' living environments, particularly parents. The thematic analysis by Seemüller et al. (2024) underscores the importance of parental involvement in decision-making processes, including prioritization and the values underlying such decisions. Referring to Table 3, some developmental changes in early adolescence appear to be associated with reduced self-confidence. Therefore, addressing these issues is essential to promote adolescents' well-being and development.

5.3. Adolescent Girls' Knowledge of Reproductive Health

Several studies have demonstrated that adolescents' knowledge significantly influences their decision-making processes, although under legal and family frameworks, responsibility for adolescent protection and guidance still primarily rests with parents (Fidora & Utami, 2022; Kristianti & Widjayanti, 2021; Pasaribu & Novalina, 2023; Pratama, 2021).

Referring to the data presented in Table 4, the role of parents in providing reproductive health education emerges as a critical factor. Parental awareness of the importance of children's reproductive health is therefore essential. However, cultural and religious values, which are still strongly upheld by many parents, often shape how reproductive health education is delivered within families. Culture, in particular, exerts a significant influence on how adolescent health issues are addressed (Akbar et al., 2021).

Based on this explanation, a habituation process is needed to raise awareness of adolescent reproductive health. This process can be implemented through a character-building approach that emphasizes care for reproductive health. The proposed stages are as follows:

<p>First Stage: Self-Awareness through Understanding Adolescent Reproductive Organs</p>	<p>This stage introduces adolescents to their reproductive organs and helps them understand the importance of recognizing bodily changes during puberty.</p>
<p>Second Stage: Literacy on Growth, Development, and Social Interaction</p>	<p>This stage involves gaining literacy about growth, development, and social interactions during early adolescence. With a solid understanding of physical, psychological, and social changes, adolescents will be better equipped to make informed decisions and take appropriate actions to maintain their health.</p>

Third Stage: Maintaining Personal and Environmental Hygiene	During this stage, adolescents are encouraged to maintain personal hygiene and protect themselves from issues that could compromise their reproductive health. This includes avoiding risky behaviors, adhering to religious and moral values, and developing a commitment to health. If reproductive health concerns arise, adolescents and their parents are advised to seek assistance from available reproductive health services in their area.
Fourth Stage: Empathy and Care	Developing empathy is essential for adolescents to support and educate their peers about reproductive health. Although this value may be challenging to instill in early adolescence, it is an important step toward fostering mutual trust and peer-led education. This aligns with the developmental phase in which adolescents are more likely to trust and rely on their peers for guidance.
Fifth Stage: Self-Development	This final stage focuses on equipping adolescents to adapt to and thrive during the middle and late phases of adolescence. By building on their early experiences, adolescents can develop the skills and resilience needed to address the challenges and changes associated with these developmental stages, ultimately achieving self-actualization in accordance with their evolving needs.

The five stages above require further in-depth study through ongoing research to ensure their effective implementation at the primary education level. The aim is for reproductive health awareness character-building to extend beyond the initial phase and become a continuous developmental process. Such an approach may help address future health challenges, particularly stunting, which remains an unresolved issue.

6. Conclusion

Based on the research findings, fostering a sense of care among adolescents is crucial for strengthening reproductive health awareness. The findings indicate that reproductive health issues among adolescent girls are closely related to limited knowledge of physical, psychological, and social changes during early adolescence. In this study, 50.19% of respondents had not yet experienced menstruation, and 77.57% did not understand the concept of menarche. Many respondents also felt embarrassed about physical changes, with 66.20% feeling self-conscious about breast development and 68.44% feeling embarrassed about the growth of underarm and pubic hair. This lack of self-confidence, combined with adolescents' desire for self-expression and concern about appearance, indicates the need for age-appropriate reproductive health education. Nutritional awareness also requires attention, as 52.47% of adolescent girls were classified as underweight. This finding suggests that adolescent girls may face nutritional risks that can affect their physical growth and future reproductive health. In addition, parents remain an important source of reproductive health information for adolescent girls. However, the findings also show gaps in menstrual hygiene knowledge. Although some adolescents were aware of general personal hygiene practices, many still lacked proper knowledge about menstrual care, including how to clean themselves during menstruation. If left unaddressed, these gaps may adversely affect their reproductive health. The long-term implications of these issues highlight the urgent need for a cross-sectoral approach involving families, schools, healthcare professionals, and community institutions. Such collaboration is essential to develop age-appropriate reproductive health education and to foster Caring Character among adolescent girls in primary education.

Limitation

This study has several limitations. First, it employed a cross-sectional design, which only captured respondents' conditions at a single point in time. Therefore, the findings cannot explain changes in reproductive health awareness, self-care practices, or Caring Character development over time. Second, the study involved only female students aged 9–12 years from selected public elementary schools in Bandung City. As a result, the findings may not be fully generalizable to adolescent girls in other regions, private schools, or different sociocultural contexts. Third, the data were collected using self-reported questionnaires, which may be influenced by respondents' understanding, memory, and willingness to answer sensitive questions. Although the researchers provided explanations before questionnaire completion, some respondents still showed confusion about terms related to menstruation, pubic hair growth, and pelvic enlargement. Finally, this study focused on identifying baseline conditions related to growth, development, and reproductive health knowledge. Further research is needed to develop, implement, and evaluate a Caring Character-based reproductive health module for early adolescents.

Recommendation

Based on the findings, this study recommends the development of a Caring Character-based reproductive health module for early adolescents aged 9–12 years. This module should aim to foster reproductive health awareness from an early age by integrating knowledge of bodily changes, menstrual hygiene, nutritional needs, self-care practices, and prevention of sexual violence. In addition, learning models, evaluation methods, and collaborative strategies involving parents, teachers, and healthcare professionals should be developed to ensure effective implementation and long-term impact.

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Conflict of Interest

The author(s) declare(s) that there is no conflict of interest.

Declaration of Generative AI-assisted Technologies

This manuscript was prepared with the assistance of Generative AI ChatGPT Plus. The AI was used to assist in language refinement. All intellectual contributions, critical analyses, and final revisions were conducted by the authors. The authors take full responsibility for the accuracy, originality, and integrity of the content presented in this work.

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