# FACTORS RELATED TO THE POTENTIAL ACCELERATION OF MENARCHE

**Rima Novianti[1], Dila Ardila[1]**
[1]Bachelor of Nursing Program, STIKes Horizon Karawang, Indonesia
*Corresponding email*: rimater15@gmail.com

## Abstract

Menarche is the first period of menstruation that young women get when they reach puberty. According to RISKESDAS (2013), the average age of menarche is less than 12 years old. One of the issues is the lack of reproductive health knowledge, which is inversely linked to the openness of mass media that is freely available to adolescents. The goal of this study is to determine the factors that contribute to the potential acceleration of menarche age in Karawang adolescents. This research used a cross-sectional design with 391 research samples. Snowball Sampling and Simple Random Sampling are two sampling methodologies. The Chi-Square test with a degree of significance (0.05) was utilized in the univariate and bivariate analyses. The findings revealed a link between genetics (p: 0.000), adult mass media exposure (p: 0.004), first date (p: 0.000), socioeconomic status (p: 0.001), and nutritional status (obesity p: 0.000, normal p: 0.007, underweight p: 0.001) with the possible acceleration of menarche, although there is no link between overweight p: 0.760 and the possible acceleration of menarche age. Menarche is the first step towards a mature reproductive system with the younger menarche age, it is necessary to prepare the maximum knowledge about physical changes that occur in order for adolescents to prepare for their reproductive health and self-acceptance of the task of the next stage of development.

**Keywords:** Adult Mass Media Exposure, first date, genetic, menarche.

## INTRODUCTION

Improving the sexual and reproductive health of adolescent girls is one of the primary aims of the Sustainable Development Goals (Zakaria et al., 2020). The third aim of the Sustainable Development Goals is to provide a healthy life and increase the well-being of all people of all ages, with one of the aims being universal access to sexual and reproductive health services (United Nations, 2018). The purpose of reproductive women's health services is to prepare adolescents to be healthy adults who are productive and free of various health conditions that can make it difficult to engage in reproductive women's health, healthily so that they can become a healthy generation (Novianti, 2018, Via et al., 2021).

The world's population has reached 7.7 billion people, with 4.6 billion of them living in Asia, which is dominated by youth (Worldometers, 2019). Indonesia had a population of 265 million people in 2018, with 131.88 (49%) million women. Females aged 0 to 19 years old accounted for 45.31 million (43%). In 2019, the population of Java Island was 150.4 million people, with 75.17 (49%) of the population being female. West Java has the most people, with a

population of 49 (32.3%) million people and a female population of 24.2 (49%) million (Badan Pusat Statistik, 2018, 2019a). While Karawang has a population of 2.3 million people, the number of female residents in the 10-14 year age reached 98,072 thousand and the 15-19 year age reached 96,725 thousand (Badan Pusat Statistik, 2019b).

Girls are reaching puberty at an earlier age than ever before; in recent years, the age at which a kid reaches menarche has switched to a younger age (BBC World News, 2018). The typical age of menarche in Indonesia is 13 years, according to RISKESDAS (2010) and according to the RISKESDAS 2013 data, the average Indonesian female reaches menarche at the age of fewer than 12 years (Yuliasari et al., 2016). The average age of menarche has decreased, according to a research study based on RISKESDAS findings. The Indonesian Pediatric Association (2017) stated in Arthasalina (2019) that girls who experience their first menstruation (menarche) before the age of ten years have a predisposition to become pregnant.

Menarche is influenced by genetics, race, nutritional status, physical activity, physical health, socioeconomic factors, external stimulants (media exposure and attraction to the opposite sex), psychological, nutritional, and parental education levels in young women (Prabasiwi, 2011; Yuliasari et al., 2016). According to a survey by researchers using Google Forms, a total of 27 teenagers filled out the following description: 14 students reach menarche at the age of 13, 11 students are genetically < 13 years old, 13 students are exposed to adult media and 11 students have their first Date at the age of < 13, 15 students have a UMR due to their socioeconomic status, and 5 students have a BMI of overweight or obese. According to the theory and phenomena that accelerates the age of menarche each year, the greater the risk that teenage girls will face in the future, one of which is early pregnancy and preparedness to become a parent while still in the adolescent phase (Lee, 2021). The topic of "Factors Related To The Potential Acceleration Of Menarche In Karawang" is particularly fascinating to researchers.

## METHOD

The research uses a cross-sectional approach to examine the association between adult mass media exposure, genetics, menarche, nutritional status, first date, puberty, and socioeconomic status and the potential for menarche acceleration. The participants in this study were young women who had gone through menarche. Researchers used Snowball Sample and Simple Random Sampling as sampling methodologies, with as many as 391 respondents filling

out the Google Form. Researchers explain how to complete surveys that will be distributed to respondents. Allowing the respondents time to complete the questionnaire allows them to inquire if a question in the questionnaire is unclear. The information was gathered in July of 2020.

## RESULTS

This study's analysis includes cross-tabulation of genetic factors (maternal menarche), adult mass media exposure, first date, socioeconomic status, and nutritional status with a potential acceleration of menarche, as well as the distribution and percentage of each data variable related to the potential acceleration of menarche.

**Table 1. Frequency Distribution Based on Characteristics of Respondents Acceleration Of Menarche, Genetic Factors (Maternal Menarche), Adult Mass Media Exposure, First Date, Socioeconomic Status, Nutritional Status (n = 391)**

| No | Variabel | Frekuensi | Presentase (%) |
|---|---|---|---|
| 1 | **Acceleration Of Menarche** | | |
| | < 13 Years Old | 174 | 44.5 |
| | ≥ 13 Years Old | 217 | 55.5 |
| 2 | **Genetic Factors (Maternal Menarche)** | | |
| | < 13 Years Old | 153 | 39.1 |
| | ≥ 13 Years Old | 238 | 60.9 |
| 3 | **Adult Mass Media Exposure** | | |
| | Exposure | 203 | 51.9 |
| | Not Exposure | 188 | 48.1 |
| 4 | **First Date** | | |
| | < 13 Years Old | 132 | 33.8 |
| | ≥ 13 Years Old | 259 | 66.2 |
| 5 | **Socioeconomic Status** | | |
| | ≥ UMR | 214 | 54.7 |
| | < UMR | 177 | 45.3 |
| 6 | **Nutritional Status** | | |
| | Obesity | 15 | 3.8 |
| | Overweight | 59 | 15.1 |
| | Normal | 218 | 55.8 |
| | Underweight | 99 | 25.3 |

The table shows, 391 respondents who experienced an acceleration of menarche age ≥ 13 years amounted to 217 (55.5%) respondents, genetic factors (maternal menarche age) at the age of ≥ 13 years amounted to 238 (60.9%) respondents, 203 (51.9%) were exposed to adult mass media respondents, the first date ≥ 13 years amounted to 259 (66.2%) respondents,

socioeconomic ≥ UMR amounted to 214 (54.7%) respondents, normal weight amounted to 218 (55.8%) respondents.

**Tabel 2. Genetic Factors (Maternal Menarche) Relationship With Potential Acceleration Of Menarche (n = 391)**

| Genetic Factors (Maternal Menarche) | Potential Acceleration Of Menarche | | | | | | OR (95%CI) | P (α<0,05) |
|---|---|---|---|---|---|---|---|---|
| | < 13 Years Old | | ≥ 13 Years Old | | Total | | | |
| | n | (%) | n | (%) | n | (%) | | |
| < 13 Years Old | 97 | 63.4 | 56 | 36.6 | 153 | 100 | 3.622 (95% CI: 2.364 – 5.548) | 0.000 |
| ≥ 13 Years Old | 77 | 32.4 | 161 | 67.6 | 238 | 100 | | |
| Total | 174 | 44.5 | 217 | 55.5 | 391 | 100 | | |

According to the results of statistical tests, genetic factors with a potential acceleration of menarche (< 13 years old) is 63.4%, genetic factors with a potential acceleration of menarche (≥ 13 years old) are 67.6%, p-value: 0.000 (<0.05) indicating that there is a relationship between genetic factors with a potential acceleration of menarche, despite having OR of 3.622 (95% CI: 2.364 – 5.548), indicating that genetic factors (maternal menarche age) < 13 Years have a risk of 3.622 times compared to genetic factors (maternal menarche age) ≥ 13 Years.

**Tabel 3. Adult Mass Media Exposure Relationship with Potential Acceleration of Menarche (n = 391)**

| Adult Mass Media Exposure | Potential Acceleration Of Menarche | | | | | | OR (95%CI) | P (α<0,05) |
|---|---|---|---|---|---|---|---|---|
| | < 13 Years Old | | ≥ 13 Years Old | | Total | | | |
| | N | (%) | n | (%) | n | (%) | | |
| Exposure | 105 | 51.7 | 98 | 48.3 | 203 | 100 | 1.848 (95% CI: 1.233 – 2.769) | 0.004 |
| Not Exposure | 69 | 36.7 | 119 | 63.3 | 188 | 100 | | |
| Total | 174 | 44.5 | 217 | 55.5 | 391 | 100 | | |

According to the results of statistical tests, adult mass media exposure with a potential acceleration of menarche (< 13 years old) is 51.7%, adult mass media not exposure with a potential acceleration of menarche (≥ 13 years old) is 63.3%, p-value: 0.004 (<0.05) indicating that there is a relationship between adult mass media exposure with a potential acceleration of

menarche, despite having OR of 1.848 (95% CI: 1.233 – 2.769), indicating that the students with adult mass media exposed have a risk of 1.848 times compare adult mass media, not exposure.

**Tabel 4. First Date Relationship With Potential Acceleration Of Menarche (n = 391)**

| First Date | Potential Acceleration Of Menarche | | | | Total | | OR (95%CI) | P (α<0,05) |
|---|---|---|---|---|---|---|---|---|
| | < 13 Years Old | | ≥ 13 Years Old | | | | | |
| | n | (%) | n | (%) | n | (%) | | |
| < 13 Years Old | 81 | 61.4 | 51 | 38.6 | 132 | 100 | 2.835 (95% CI: 1.839 – 4.370) | 0.000 |
| ≥ 13 Years Old | 93 | 35.9 | 166 | 64.1 | 259 | 100 | | |
| Total | 174 | 44.5 | 217 | 55.5 | 391 | 100 | | |

According to the results of statistical tests, first date (< 13 years old) with a potential acceleration of menarche (< 13 years old) is 61.4%, while first date (≥ 13 years old) with a potential acceleration of menarche (≥ 13 years old) is 64.1%, p-value: 0.000 (<0.05) indicating that there is a relationship between the first date with a potential acceleration of menarche, despite having OR of 2: 2,835 (95% CI: 1,839 - 4,370), indicating that the students with the first date < 13 years old have a risk of 2.835 times compare first date ≥ 13 years old.

**Tabel 5. Socioeconomic Status Relationships With Potential Acceleration Of Menarche (n = 391)**

| Socioeconomic Status | Potential Acceleration Of Menarche | | | | Total | | OR (95%CI) | P (α<0,05) |
|---|---|---|---|---|---|---|---|---|
| | < 13 Years Old | | ≥ 13 Years Old | | | | | |
| | n | (%) | n | (%) | n | (%) | | |
| ≥ UMR | 112 | 52.3 | 102 | 47.7 | 214 | 100 | 2.037 (95% CI: 1.353 – 3.066) | 0.001 |
| < UMR | 62 | 35.0 | 115 | 65.0 | 177 | 100 | | |
| Total | 174 | 44.5 | 217 | 55.5 | 391 | 100 | | |

According to the results of statistical tests, ≥ UMR with a potential acceleration of menarche (< 13 years od) is 52.3% while < UMR with a potential acceleration of menarche (≥ 13 years old) is 65%, p-value: 0.001 (<0.05) indicating that there is a relationship between socioeconomic status with a potential acceleration of menarche, despite having OR of 2,037 (95

percent CI: 1,353 - 3,066), indicating that the students from socioeconomic status ≥ UMR are 2,037 times to have menarche compare < UMR.

**Tabel 6. Nutritional Status Relationship With Potential Acceleration Of Menarche (n = 391)**

| Nutritional Status | Potential Acceleration Of Menarche | | | | Total | | OR (95%CI) | P (α<0,05) |
|---|---|---|---|---|---|---|---|---|
| | < 13 Years Old | | ≥ 13 Years Old | | | | | |
| | n | (%) | N | (%) | n | (%) | | |
| Obesity | 12 | 80.0 | 3 | 20.0 | 15 | 100 | - | 0.000 |
| Overweight | 45 | 76.3 | 14 | 23.7 | 59 | 100 | 1.244 (95% CI : 0.307 – 5.047) | 0.760 |
| Normal | 88 | 40.0 | 130 | 59.6 | 218 | 100 | 5.909 (95% CI : 1.620 – 21.547) | 0.007 |
| Underweight | 29 | 29.3 | 70 | 70.7 | 99 | 100 | 9.655 (95% CI : 2.535 – 36.768) | 0.001 |
| Total | 174 | 44.5 | 217 | 55.5 | 391 | 100 | | |

According to the results of statistical tests, nutritional status (obesity) with a potential acceleration of menarche (80.0%), p-value: 0.000 (<0.05) indicating that there is a relationship between obesity and potential acceleration of menarche. Nutritional Status (overweight) with a potential acceleration of menarche (76.3 %), p-value: 0.760 (> 0.05) indicating that there is no relationship between overweight and potential acceleration of menarche, despite having OR 1.244 (95% CI: 0.307 – 5.047). Nutritional Status (normal weight) with a potential acceleration of menarche (40.0%), p-value: 0.007 (0.05) indicating that there is a relationship between normal weight and potential acceleration of menarche, despite having OR 5.909 (95% CI: 1.620 – 21.547), indicating that the risk of normal weight is 5.909 times the potential acceleration of menarche. Nutritional Status (underweight with) potential acceleration of menarche (29.3%), p-value 0.001 (<0.05) indicating that there is a relationship between underweight and potential acceleration of menarche, despite having OR 9.655 (95% CI: 2.535-36.768) indicating that the risk of underweight is 9.655 times the potential acceleration of menarche compare obesity.

## DISCUSSION

### 1. Genetic Factors (Maternal Menarche Age) Relationship With Potential Acceleration Of Menarche

According to the results of statistical tests, genetic factors with a potential acceleration of menarche (< 13 years old) is 63.4%, genetic factors with a potential acceleration of menarche (≥ 13 years old) are 67.6%, p-value: 0.000 (<0.05) indicating that there is a relationship between genetic factors with a potential acceleration of menarche, despite having OR of 3.622 (95% CI: 2.364 – 5.548), indicating that genetic factors (maternal menarche age) < 13 Years have a risk of 3.622 times compared to genetic factors (maternal menarche age) ≥ 13 Years.

Genetics are factors that influence the development of individuals inherited by parents to children. Genetics can affect the speed of growth of the child's body, thus affecting the timing of menstruation but modern lifestyle can changes the important factors for early age at menarche. The results of previous studies showed a p-value: 0.000 ($\alpha < 0.05$) which means there is a link between genetics and menarche age (Malitha et al., 2020; Nuzul & Maulidani, 2017).

Based on the results of studies, theories, and supporting research, researchers assume that genetic factors play a role in menarche age determinants. It can be seen that the respondents who as children are the majority have the same age as their mother. Meanwhile, respondents who experienced menarche < 13 years signify the existence of other factors related to health such as opposite-sex interests and socioeconomic. The analysis also showed genetic ≥ 13 Years and menarche age of students < 13 Years, can be influenced by other factors that cause early childhood menarche age for example the order of birth of children affects the average age of menarche 0.19 years faster and exposure to adult mass media can also accelerate the age of menarche.

### 2. Adult Mass Media Exposure Relationship With Potential Acceleration Of Menarche

According to the results of statistical tests, adult mass media exposure with a potential acceleration of menarche (< 13 years old) is 51.7%, adult mass media not exposure with a potential acceleration of menarche (≥ 13 years old) is 63.3%, p-value: 0.004 (<0.05) indicating that there is a relationship between adult mass media exposure with a potential

acceleration of menarche, despite having OR of 1.848 (95% CI: 1.233 – 2.769), indicating that the students with adult mass media exposed have a risk of 1.848 times compare adult mass media, not exposure.

Exposure to the media will improve many aspects related to sexual maturation. Strong external stimuli such as movies, books, or magazines with indecent images (porn) will enter the sensory center passed through the terminals striae to the center of the so-called puberty inhibitor. Continuous stimulation, then towards the hypothalamus and then towards the anterior pars hypophyses, through the portal system so that the anterior hypophysis secretes hormones that stimulate the ovaries to secrete estrogen and progesterone hormones. The hormones estrogen and progesterone provide feedback so that the hormone becomes fluctuating. The release of these hormones affects the maturity of the reproductive organs, resulting in faster sexual maturity. The results of previous research showed a p-value 0.003 ($\alpha < 0.05$) which means there is a relationship between adult mass media exposure relationship with a potential acceleration of menarche (Yuliasari et al., 2016; Zakaria et al., 2020)

Based on the results of studies, theories, and supporting research, researchers assume that many adolescents < 13 years old there are 105 (51.7%) exposed to adult mass media. Today's teenagers tend to be easily influenced by information from the mass media. Ignorance in teenagers results in them trying new things whether it's positive or negative. Respondents who are not exposed to adult mass media can be influenced by several factors, including understanding religion and the influence of peers. While respondents who are not exposed to adult mass media and menarche age < 13 Years there are 69 (36.7%), can be influenced by other factors that cause early menarche age one of the nutritional statuses so that although respondents are not exposed respondents can cause menarche age < 13 Years.

### 3. First Date With Potential Acceleration Of Menarche

According to the results of statistical tests, first date (< 13 years old) with a potential acceleration of menarche (< 13 years old) is 61.4%, while first date (≥ 13 years old) with a potential acceleration of menarche (≥ 13 years old) is 64.1%, p-value: 0.000 (<0.05) indicating that there is a relationship between the first date with a potential acceleration of menarche, despite having OR of 2: 2,835 (95% CI: 1,839 - 4,370), indicating that the

students with the first date < 13 years old have a risk of 2.835 times compare first date ≥ 13 years old.

Courtship is an attempt to approach or get to know more close friends, but it must be with the awareness that it must keep the relationship on the right track by social and religious norms. Dating or not is every individual's choice. Courtship, temptation, and stimulation of men make stimuli that can stimulate hormonal fluctuating can result in faster sexual maturity. The results of previous research showed a p-value of 0.019 (α < 0.05) which means there is a relationship between the attraction of the opposite sex and acceleration of menarche age (Chen et al., 2017; Meilan et al., 2018; Yuliasari et al., 2016).

Based on the results of studies, theories, and supporting research, researchers assume many respondents who have a girlfriend at the age of ≥ 13 choose not to date quickly and have the awareness that it must keep the relationship on the right track. While respondents who have a girlfriend at the age of < 13 years, have been tempted by the stimulation of peers quickly and it can affect the acceleration of menarche age. The role of parents who have daughters should be able to supervise close friends, provide education related to making friends with the opposite sex and keep the relationship on the right track by social and religious norms. Respondents who first had a boyfriend ≥ 13 years and menarche age < 13 Years there are 93 (35.9%), can be influenced by other factors such as high socioeconomic family to increase the purchasing power of the family either from food (nutrition) or mass media which can both accelerate the age of menarche.

**4. Socioeconomic Status Relationships With Potential Acceleration Of Menarche**

According to the results of statistical tests, ≥ UMR with a potential acceleration of menarche (< 13 years od) is 52.3% while < UMR with a potential acceleration of menarche (≥ 13 years old) is 65%, p-value: 0.001 (<0.05) indicating that there is a relationship between socioeconomic status with a potential acceleration of menarche, despite having OR of 2,037 (95 percent CI: 1,353 - 3,066), indicating that the students from socioeconomic status ≥ UMR are 2,037 times to have menarche compare < UMR.

Economic status is the shaper of the family lifestyle. Adequate family income will support the growth of children. This is because a high parental income shows a family's ability to meet the needs of food purchasing power, both basic needs such as nutrition and

access to health services. Early age at menarche may be an important factor affecting the sexual and reproductive health of adolescent girls and young women in low- and middle-income countries. Given the association of early menarche with early marriage, ongoing efforts to reduce child marriage may benefit from targeting efforts to early maturing girls. The results of previous research showed a p-value of 0.000 ($\alpha < 0.05$) which means, there is a relationship between socioeconomic and accelerated age menarche (Ibitoye et al., 2017; Laili & Malitasari, 2016).

Based on the results of studies, theories, and supporting research, researchers assume that the high income of the family is associated with the family's ability in terms of nutritional adequacy, especially the nutrition of their daughters, the ability to buy and enjoy mass media, especially electronic media so that they can easily access information. More child nutrition and strong stimuli to adult information will eventually be age-related. The family must still control the nutritional needs of the child so that there is no lack of weight or excess and control the access to information obtained by his daughter. While the socio-economic family < UMR is associated with a lack of purchasing power of the family. The results of respondents who have socioeconomic family monthly < UMR and menarche age < 13 Years can be influenced by other factors that can cause early menarche age, one of which is genetic or maternal menarche age, which can affect the age of the respondent's menarche.

**5. Nutritional Status Relationship With Potential Acceleration Of Menarche**

According to the results of statistical tests, nutritional status (obesity) with a potential acceleration of menarche (80.0%), p-value: 0.000 (<0.05) indicating that there is a relationship between obesity and potential acceleration of menarche. Nutritional Status (overweight) with a potential acceleration of menarche (76.3 %), p-value: 0.760 (> 0.05) indicating that there is no relationship between overweight and potential acceleration of menarche, despite having OR 1.244 (95% CI: 0.307 – 5.047). Nutritional Status (normal weight) with a potential acceleration of menarche (40.0%), p-value: 0.007 (0.05) indicating that there is a relationship between normal weight and potential acceleration of menarche, despite having OR 5.909 (95% CI: 1.620 – 21.547), indicating that the risk of normal weight is 5.909 times the potential acceleration of menarche. Nutritional Status (underweight with) potential acceleration of menarche (29.3%), p-value 0.001 (<0.05) indicating that there is a

relationship between underweight and potential acceleration of menarche, despite having OR 9.655 (95% CI: 2.535-36.768) indicating that the risk of underweight is 9.655 times the potential acceleration of menarche compare obesity.

Women need to maintain a good nutritional status through a balanced diet during adolescence because they need good nutrition during menstruation. Although being overweight (p: 0.760) does not fit the theory because it will be affected at the age of menarche, female students have not experienced overweight and other factors affect one of them, adult mass media makes overweight does not affect the age of menarche (Barros et al., 2019; Juliyatmi & Handayani, 2015; Pudiastuti, 2012).

Based on the results of research, theory, and supporting research, the researchers assumed that the number of respondents who had been on a diet would limit their weight to a normal range because IMT calculations are performed when adolescents are not at the beginning of their menarche. Obesity (p: 0.000), normal weight (p: 0.007), and underweight (p: 0.001) are in line with the theory that nutritional status (obesity, normal weight, underweight) will accelerate aging. Women need to maintain a good nutritional status through a balanced diet during adolescence because they need good nutrition during menstruation. Although being overweight (p: 0.760) does not fit the theory because it will be affected during menarche, female students have not experienced being overweight, and other factors affect one of the factors exposed to adult mass media.

## CONCLUSIONS

In menarche age, genetic factors play a decisive role, most respondents are the same age as their mother. In today's youth, information from the mass media is easily influenced. Ignorance among adolescents leads to new things being tested, whether positive or negative. A partner at age 13 can quickly influence acceleration in menarche age and be easily seduced by peer stimuli. The family's ability to provide nutrition, more child nutrition, and strong stimuli to adult information, which is finally linked to menarche age, is related to high family revenues. Menarche's nutritional status has a significant influence earlier than those who have not menstruated at a similar age, it tends to be larger and higher at menarche.

## REFERENCES

Arthasalina, D. (2019). *Penyebab Gadis Kecil Kecil Mama Alami Menstruasi Dini*.

Badan Pusat Statistik. (2018). *Jumlah Penduduk Perempuan Indonesia Tahun 2018.* https://databoks.katadata.co.id/datapublish/2018/06/08/jumlah-penduduk-perempuan-indonesia-pada-2018-mencapai-1319-juta-jiwa

Badan Pusat Statistik. (2019a). *Jumlah Penduduk di Pulau Jawa 2019.* https://databoks.katadata.co.id/datapublish/2019/05/14/berapa-jumlah-penduduk-di-pulau-jawa-2019

Badan Pusat Statistik. (2019b). *Jumlah Penduduk Kabupaten di Jawa Barat Tahun 2019.* https://databoks.katadata.co.id/datapublish/2019/07/18/berapa-jumlah-penduduk-di-provinsi-jawa-barat-pada-2019

Barros, B. de S., Kuschnir, M. C. M. C., Bloch, K. V., & Silva, T. L. N. da. (2019). ERICA: age at menarche and its association with nutritional status. *Jornal de Pediatria*, *95*(1), 106–111. https://doi.org/10.1016/j.jped.2017.12.004

BBC World News. (2018). *Berbagai Risiko Kesehatan Akibat Pubertas Dini*.

Chen, F. R., Rothman, E. F., & Jaffee, S. R. (2017). Early Puberty, Friendship Group Characteristics, and Dating Abuse in US Girls. *Pediatrics*, *139*(6). https://doi.org/10.1542/peds.2016-2847

Ibitoye, M., Choi, C., Tai, H., Lee, G., & Sommer, M. (2017). Early menarche: A systematic review of its effect on sexual and reproductive health in low- and middle-income countries. *PloS One*, *12*(6), e0178884. https://doi.org/10.1371/journal.pone.0178884

Juliyatmi, R. H., & Handayani, L. (2015). Nutritional Status and Age at Menarche on Female Students of Junior High School. *International Journal of Evaluasi Dan Penelitian Dalam Pendidikan*, *4*(2), 71–75.

Laili, U., & Malitasari, F. A. (2016). Hubungan Antara Status Gizi dan Status Ekonomi dengan Kejadian Menarche. *Jurnal Ners Dan Kebidanan*, *3*(1), 28–31. https://doi.org/10.26699/jnk.v3i1.ART.p028-031.

Lee, H. S. (2021). Why should we be concerned about early menarche? In *Clinical and experimental pediatrics*, 64(1), pp. 26–27. https://doi.org/10.3345/cep.2020.00521

Malitha, J. M., Islam, M. A., Islam, S., Al Mamun, A. S. M., Chakrabarty, S., & Hossain, M. G. (2020). Early age at menarche and its associated factors in school girls (age, 10 to 12 years) in Bangladesh: a cross-section survey in Rajshahi District, Bangladesh. *Journal of Physiological Anthropology*, *39*(1), 6. https://doi.org/10.1186/s40101-020-00218-w.

Meilan, N., Maryanah, & Follona, W. (2018). *Kesehatan Reproduksi Remaja : Implementasi PKPR dalam Teman Sebaya.* Wineka Media.

Novianti, R. (2018). Komunikasi, Informasi Dan Edukasi (KIE) Meningkatkan Pengetahuan Tentang Pencegahan Perilaku Seksual Pranikah Pada Remaja. *Jurnal Keperawatan Dan Kebidanan*, *8*(1), 33 sd 43. http://jurnal.stikes-kharisma.ac.id/index.php/jkk/article/view/4.

Nuzul, R., & Maulidani. (2017). Hubungan Status Gizi dan Genetik dengan Usia Menstruasi Pertama ( Menarche ) pada Siswi SMP Negeri 17 Banda Aceh. *Journal of Healthcare Technology and Medicine*, *3*(2), 198–208.

Prabasiwi, A. (2011). Faktor-faktor Yang Berhubungan Dengan Status Menarche pada Siswi SMPN Tegal. *Jurnal Kesehatan Masyarakat*, *1*(4).

Pudiastuti, R. D. (2012). *Tiga Fase Penting pada Wanita*. Alex Media Komputindo.

United Nations. (2018). *Sustainable Development Goals*. https://sdgs.un.org/goals

Via, P., Nuraeni, N., & Rosidawati, I. (2021). The Radiness Of Elementary School Students To Face Menarche: Literature Review. *Journal of Maternity Care and Reproductive Health*, *4*(2).

Worldometers. (2019). *Jumlah Penduduk Dunia pada Tahun 2019*.

Yuliasari, L., Rosida, L., & Wahtini, S. (2016). Hubungan Paparan Media Dengan Usia Menarche pada Siswi Kelas V DAN VI Di SD Muhammadiyah Wirobrajan 3 Yogyakarta. *UNISA Yogyakarta*, 2–8.

Zakaria, M., Karim, F., Mazumder, S., Cheng, F., & Xu, J. (2020). Knowledge on, Attitude towards, and Practice of Sexual and Reproductive Health among Older Adolescent Girls in Bangladesh: An Institution-Based Cross-Sectional Study. *International Journal of Environmental Research and Public Health*, *17*(21). https://doi.org/10.3390/ijerph17217720.