

## Relationship between Dietary Patterns and Physical Activity with the Occurrence of Menarche in Adolescent Girls at SMP Negeri 1 Paciran Lamongan

Silvana Anggita Dewi <sup>1)</sup>, Nur Cholila <sup>2)</sup>

<sup>1,2)</sup> Midwifery Study Program, Faculty of Nursing and Midwifery Nahdlatul Ulama Institute of Health Sciences Tuban, Indonesia

Email\*: [silvanadewi1026@gmail.com](mailto:silvanadewi1026@gmail.com)

DOI: <https://doi.org/10.52060/hmaps.v2i2.2445>

### ABSTRAK

Menarche adalah tanda pertama menstruasi yang menandai dimulainya masa pubertas pada remaja putri, ditandai oleh proses hormonal kompleks yang melibatkan hipotalamus, hipofisis, dan ovarium. Penelitian ini bertujuan untuk menganalisis hubungan antara pola makan dan aktivitas fisik dengan kejadian Menarche pada remaja putri di SMP Negeri 1 Paciran Lamongan. Desain penelitian yang digunakan adalah analitik korelasional dengan pendekatan cross-sectional. Hasil penelitian menunjukkan bahwa remaja putri dengan pola makan berlebih cenderung mengalami *Menarche* dini dibandingkan dengan mereka yang mengalami pola makan yang cukup. Sedangkan remaja putri dengan pola aktivitas fisik rendah cenderung mengalami *Menarche* dini dibandingkan dengan mereka yang memiliki tingkat aktivitas fisik sedang. Penelitian ini menegaskan bahwa pola makan dan aktivitas fisik berhubungan signifikan dengan kejadian *Menarche*. Oleh karena itu, penting untuk meningkatkan edukasi mengenai pola makan seimbang dan aktivitas fisik yang cukup di lingkungan sekolah dan keluarga untuk mendukung perkembangan pubertas yang sehat

**Kata Kunci :** Menarche, Aktivitas Fisik, Pola Makan

### ABSTRACT

Menarche is the first sign of menstruation that marks the beginning of puberty in adolescent girls, marked by a complex hormonal process involving the hypothalamus, pituitary, and ovaries. This study aims to analyze the relationship between diet and physical activity with the incidence of menarche in adolescent girls at SMP Negeri 1 Paciran Lamongan. The research design used was correlational analytic with a cross-sectional approach. The results showed that adolescent girls with excessive diet patterns tended to experience early menarche compared to those who had sufficient diet patterns. While adolescent girls with low physical activity patterns tended to experience early menarche compared to those with moderate levels of physical activity. This study confirms that diet and physical activity are significantly related to the incidence of menarche. Therefore, it is important to improve education about balanced diet patterns and sufficient physical activity in school and family environments to support healthy puberty development.

**Keywords:** Menarche, Physical Activity, Diet

## BACKGROUND

Adolescence is a transition period from childhood to early adulthood (Tari & Tafonao, 2019). During this period, physical maturation occurs faster than mental or psychological maturation (BKKBN and BPS, 2019). Based on the results of the 2020 census, it was shown that adolescents aged 10 to 19 years were 17.3% of the total population of Indonesia (Yuwono and Yakobus, 2021). In this case, during adolescence, symptoms or physical and psychological changes that are easily observed due to sexual or reproductive problems appear (Tari and Tafonao, 2019). Adolescence, also known as adolescence, is a transition period to adulthood where adolescent girls experience puberty (Fitriani, 2021 in Anggraini, F.D.). According to Enggar (2018), puberty begins when girls aged 9-13 years' experience physical and psychological changes related to their reproductive development. Menstruation is one of the signs that girls have started to enter adolescence (Rusmimpong and Hutagaol 2021). This condition is a normal condition that occurs in every female puberty. While the first menstruation in adolescent girls is called menarche (Selfiyanti, 2018). Menarche is the first menstruation that occurs due to a complex hormonal system process after the five senses receive stimulation that is forwarded to the center and processed by the hypothalamus, continued with the pituitary, starting the portal system to release follicle-stimulating gonadotropin hormones and luteinizing hormone (LH) to stimulate the ovaries (Abadi, 2015 in Septiani & Rahmi, 2022). The average incidence of menarche in various countries since the 20th century has changed and is leading to an earlier menarche age. According to WHO, about one-fifth of the world's population are adolescents aged 12-16 years experiencing changes in the age of early menarche. In the United States, about 95% of adolescents have signs of puberty with menarche at the age of 12-16 years and an average age of 12.5 years accompanied by physical changes during menarche (WHO, 2018).

According to the Ministry of Health of the Republic of Indonesia in 2018, the average age of menarche in Indonesia was 12.4 years, with 60% at the age of 9-10 years, 2.6% at 11-12 years, and 30% at 13 years. The rest experienced menarche over 13 years (Ministry of Health, 2018). The results of the 2012 Indonesian RISKESDAS showed that East Java had an average age of menarche of 36.5% at the age of 13-14 years, 2.3% at the age of 9-10 years, and 0.1% at the age of 6-8 years (Balqis et al., 2023). Based on an initial survey conducted by researchers at SMP Negeri 1 Paciran Lamongan in October, out of 20 female students, 55% had experienced early Menarche, and of that percentage, 55% of them had excessive and low

eating patterns and physical activity. The factors that cause early Menarche are genetics, nutritional status, family circumstances, residence, and lifestyle (Safitri et al., 2014). According to (Becker, 1979 in Safitri et al., 2014). Early Menarche is often associated with lifestyle. Lifestyle changes are thought to be the main factor causing early Menarche. Lifestyle changes are caused by the advancement of civilization and bring changes to modern humans, ranging from changes in diet to changes in lifestyle. Indicators of a healthy lifestyle are diet, physical activity or exercise, sleep, adult media. Lifestyle changes are also important to note, lifestyle is a daily habit that is carried out and is related to the frequency of exercise, normal sleep hours, consumption of soft drinks and fast food. Fast food or commonly called fast food is a type of food that requires a short preparation time so that the food can be consumed immediately, such as fried foods, fried chicken, French fries, and pizza. The habit of consuming fast food affects the increase in nutrition. This is due to the content of fat, animal protein, and trans-fat contained in.

The type of fast food triggers the release of hormones that affect the development of early Menarche (Madtias, 2015). In addition to the habit of eating fast food, physical activity in children also affects the emergence of early Menarche. In terms of physical activity, little exercise will increase ovarian activity, which results in higher estrogen levels. It can be concluded that estrogen levels are actually needed for the Menarche process and lack of exercise can cause early Menarche. Girls are at higher risk of suffering from adolescent fatigue. Factors that affect sleep quality in adolescents include stress and fatigue which can cause early Menarche (Safitri, 2014). Therefore, there have not been many studies that collect data samples in East Java, especially in Lamongan Regency. Therefore, this study is interested in investigating the relationship between diet and physical activity with the incidence of early Menarche in adolescent girls at SMP Negeri 1 Paciran Lamongan.

## METHOD

### **1. Research Design**

This research design uses a correlational analytical method with a cross-sectional approach.

### **2. Population and Sample**

The population of this study was all female adolescents at SMP Negeri 1 Paciran Lamongan, totaling 180 peoples, with the research sample being female adolescents in grades VII and VIII of SMP Negeri 1 Paciran Lamongan, totaling 123 peoples who met

the criteria.

### 3. Research Variables

The dependent and independent variables studied were related to the relationship between diet and physical activity with the occurrence of menarche.

### 4. Operational Definition

- a. **Diet** : Includes the types and quality of food consumed by adolescent girls, including the frequency of healthy food consumption.
- b. **Physical Activity** is includes the level of physical activity performed by adolescent girls, such as the frequency and type of exercise and the time spent on daily physical activity.

### 5. Instrument Study

This study used the FFQ (food frequency questionnaire) for dietary patterns and PAQ-C (physical activity questionnaire-children) for physical activity.

### 6. Data Analysis

Data analysis in this study used the Spearman test to determine the relationship between diet and physical activity with the incidence of menarche.

## RESULT

### A. Respondent Characteristics

Based on table 1, the results show that almost all respondents were aged 13-14 years, namely 110 (89.4%); most respondents had a diet in the excessive category, namely 87 (70.7%); most respondents had physical activity in the low category, namely 87 (70.7%); most respondents experienced early menarche, namely 86 (69.9%).

**Table 1. Respondent Characteristics**

Variable Name	Frequency (%)
<b>Age</b>	
11 – 12 years old	13 ( 10.6%)
13 – 14 years old	110 (89.4%)
<b>Diet</b>	
Overeating	87 (70.7%)
Normal	24 (19.5%)
Poor	12 (9.8%)
<b>Physical Activities</b>	
Low	86 (69.9%)
Middle	28 (20.3%)
Over	9 (8.9%)

<b>Menarche Age</b>	
Early menarche	86 (69.9%)
Ideal menarche	25 (20.3%)
Late menarche	14 (11.4%)

## B. Bivariat Analysis

Based on Tabel 2 showed that respondents with a diet in the excessive category almost all experienced early menarche, namely 82 (94.3%), while respondents with a sufficient diet experienced ideal menarche, namely 22 (91.7%), and respondents with a poor diet experienced late menarche, namely 12 (100.0%). The collected data was processed using the SPSS for Windows software application, namely SPSS version 26. Data analysis used in this study was the Spearman correlation test and a significance level ( $\alpha$ ) of 0.05 obtained  $p = 0.000$ , where  $p < 0.05$ , it can be concluded that H1 is accepted, meaning that there is a relationship between diet and the incidence of menarche in female adolescents at SMP Negeri 1 Paciran Lamongan and H2 is accepted, meaning that there is a relationship between physical activity and the incidence of menarche in female adolescents at SMP Negeri 1 Paciran Lamongan. In addition, the Spearman correlation coefficient value for diet = 0.873 and for physical activity = 0.830 was obtained, which shows that there is a very strong relationship between diet and physical activity with the incidence of menarche.

**Tabel 2. The Relationship Between Diet Patterns , Physical Activity and Menarche Incidence in Female Adolescents at SMP Negeri 1 Paciran Lamongan**

<b>Independent Variables</b>	<b>Dependent Variables</b>			<b>p value</b>
	<b>Early menarche (f, %)</b>	<b>Ideal menarche (f, %)</b>	<b>Late menarche (f, %)</b>	
<b>Diet Pattern</b>				<
Overating	82 (94,3%)	3 (3.4%)	2 (2,3%)	<b>0.001</b>
Enough	2 (8,3%)	22 (91,%)	0 (0,0%)	
Poor	0 (0,0%)	0 (0,0%)	12 (100.0%)	
<b>Physical Activity</b>				<
Low	81 (93,1%)	3 (3.4%)	3 (3.4%)	<b>0.001</b>
Middle	3 (12,0%)	22(88,0%)	0 (0,0%)	
High	0 (0,0%)	0 (0,0%)	11 (100,0%)	

### **A. Relationship Between Diet Patterns and Menarche Incidence in Adolescent Girls at SMP Negeri 1 Paciran Lamongan**

The Data analysis in this study used the Spearman test. The results of the statistical test in this study showed a relationship between diet patterns and menarche in adolescent girls at SMP Negeri 1 Paciran Lamongan. Based on Table 5.5, it is known that respondents with diet patterns in the excessive category mostly experienced early menarche, namely 82 (69.7%), while those in the sufficient category experienced ideal menarche, namely 22 (17.9%), and the less category experienced late menarche, namely 12 (9.8%). The results of the Spearman correlation test and a significance level ( $\alpha$ ) of 0.05 obtained  $p = 0.000$ , where  $p < 0.05$ , then the Spearman correlation value for diet = 0.873 was obtained. So it can be concluded that  $H_0$  is rejected and  $H_1$  is accepted, meaning that there is a relationship between diet patterns and menarche in adolescent girls at SMP Negeri 1 Paciran Lamongan. The results of this study are in line with research by Nurillah Amalia on "The Relationship between Nutritional Status and Age of Menarche in Adolescent Girls," stating that there is an influence with an OR value of 1.940. According to research by Alam S, et al., 2021, adolescent girls who have poor nutritional status tend to experience a late age of menarche; this is because nutrition is very functional for reproductive organs, where adolescents who experience malnutrition in their bodies lack nutrients so that they do not trigger an increase in leptin levels and inhibit the release of Follicle Stimulation Hormone (FSH) and Luteinizing Hormone (LH) in the ovaries so that there is no follicle maturation and estrogen formation, so that menarche has not occurred. On the other hand, adolescent girls who have better nutritional status tend to experience an early age of menarche. This is because adolescent girls who have more nutrition have fat accumulation in the body, which can trigger an increase in leptin levels secreted in the blood, triggering the release of follicle-stimulating hormone (FSH) and luteinizing hormone (LH) in the ovaries so that follicle maturation and estrogen formation occur, so that menarche occurs.

In addition, there are several young women whose nutritional status is normal who experience normal menarche age; this is because teenagers with normal nutrition in their bodies have good nutritional content that can meet their body's needs, so that the release of Follicle Stimulation Hormone (FSH) and Luteinizing Hormone (LH) in the ovaries and follicle maturation and estrogen formation run normally, so that normal menarche occurs. There are several young women with normal nutrition who experience late menarche age; this is because there are other influencing factors, such as hereditary factors and socioeconomic status factors. The cause of young women experiencing malnutrition is that there are several young women who do not eat breakfast, and many consume instant foods such as instant noodles, meatballs, and somay, where these foods have low nutritional content because they do not meet a balanced menu; this is known to researchers because researchers asked respondents directly during the study. In a study conducted by Listyowati in 2013, young women who experience malnutrition

but whose menarche age is normal can be influenced by the role of genetics, which are considered to influence the age of maturity of a woman. The mother's menarche age can affect the growth rate of the child so that it affects the time of her menarche. The mother's age of menarche is used to predict the age of menarche in her daughter. Estrogen receptor is a specific gene that determines the age of menarche in girls that can change biological activity.

Genetic factors affect the age of menarche; children of someone who develops quickly or slowly will usually also experience the same thing. Data analysis revealed that female adolescents at SMP Negeri 1 Paciran Lamongan with excessive eating patterns and nutritional status tend to experience menarche earlier, while adolescents with poor nutritional status experience delayed menarche. The role of estrogen released by fat cells in ovulation and the menstrual cycle is a key factor, where significant weight changes can affect estrogen production and the menstrual cycle. The strongest factor causing the speed or slowness of menarche in female adolescents is nutritional status, which is a significant factor related to the age of menarche. A person's nutritional status is the impact of their food intake. The nutritional intake obtained by a teenage girl, whether adequate or excessive, has an effect on the body's growth hormones, especially in accelerating the maturity of reproductive hormones so that early menarche or menarche can occur on time. Likewise, if a teenage girl receives insufficient nutritional intake, it will have an effect on the decline in reproductive function, which results in menarche occurring at an inappropriate age.

## **B. Analysis of the Relationship between Physical Activity and Menarche in Adolescent Girls at SMP Negeri 1 Paciran Lamongan**

Data analysis in this study used the Spearman test. The results of the statistical test in this study showed a relationship between physical activity and menarche in adolescent girls at SMP Negeri 1 Paciran Lamongan. Based on table 5.6, it was found that respondents with physical activity in the low category mostly experienced early menarche, namely 81 (65.9%), while those in the medium category experienced ideal menarche, namely 22 (17.9%), and the high category experienced late menarche, namely 11 (8.9%). The results of the Spearman correlation test and a significance level ( $\alpha$ ) of 0.05 obtained  $p = 0.000$ , where  $p < 0.05$ , then the Spearman correlation value for eating patterns was obtained = 0.830. So it can be concluded that  $H_0$  is rejected and  $H_2$  is accepted, meaning that there is a relationship between physical activity and eating with the occurrence of menarche in adolescent girls at SMP Negeri 1 Paciran Lamongan.

The results of this study are supported by several previous studies showing that the majority of respondents have low physical activity. This finding is consistent with several previous studies highlighting the effect of physical activity on the age of menarche. Low physical activity in adolescents is often associated with earlier menarche, while high physical activity tends to delay the age of menarche. Maidartati's (2018) study found that adolescents who are less active tend to experience menarche earlier than adolescents who are more active. Data analysis revealed that at SMP Negeri 1 Paciran Lamongan, the daily activities of adolescent girls are dominated by passive activities such

as watching television, playing gadgets, and riding motorbikes rather than doing heavier physical activities such as walking. This pattern shows that low levels of physical activity are associated with the occurrence of early menarche in adolescent girls at this school. Hartini's (2009) study also supports this finding by showing that more female students do light physical activity than those who do heavy physical activity. Conversely, research by Ajita and Jiwanjot (2014) showed that female athletes tend to experience later menarche. Henderson (2005) noted that female athletes who started training before the age of menarche usually experienced delayed menarche and more often experienced symptoms of amenorrhea or irregular menstruation during heavy physical exercise. This suggests that high physical activity can delay the age of menarche.

According to theory and evidence, there has been a causal relationship between increasing heavy sports activity and increasing the incidence of late menarche (primary amenorrhea), with the fact that the higher the expertise of a female athlete, the more it causes delayed menarche. Balanced physical activity plays an important role in the reproductive development of adolescent girls because it affects estrogen levels that regulate the menstrual cycle. Excessive physical activity can reduce ovarian activity and estrogen levels, thereby inhibiting the menarche process. Sufficient and balanced estrogen is very important in regulating the menstrual cycle, and high estrogen levels maintained over a certain period of time will trigger the release of the endometrium layer along with blood fluid, which causes the first menstruation, or menarche. Based on the results of research and existing theories, research argues that physical activity greatly influences the incidence of menarche. Technological advances also play a role in reducing the level of physical activity in adolescents. Technology makes everyday life easier, but it also reduces the need for physical activity, leading to a more sedentary lifestyle. This contributes to a decrease in physical activity, which is important for reproductive health. This study revealed that adolescent girls at SMP Negeri 1 Paciran Lamongan who had low physical activity tended to experience early menarche. Daily activities dominated by sedentary activities contributed to low levels of physical activity. To support optimal reproductive health, adolescents need to maintain a balance in their physical activity. Education and support from family, school, and community are essential to help adolescents go through puberty healthily and prepared. Raising awareness of the importance of balanced physical activity is essential to support healthy reproductive development in adolescent girls.

## AUTHOR CONTRIBUTIONS

Silvana Anggita Dewi is the main researcher who plays a role in collecting research data, formulating research articles, and processing data. Nur Cholila plays a role in the procedures for writing journals and discussing research.



## CONFLICT OF INTERESTS

There is no conflict of interest in this study.

## ACKNOWLEDGMENTS

We would like to thank all parties involved in this research, especially SMP Negeri 1 Paciran Lamongan, who gave permission to the researcher to conduct research at this location.

## REFERENCES

- Astuti R. (2010) Usia Menarche , Indeks Masa Tubuh, Frekuensi Konsumsi, dan Status Sosial Ekonomi Orang Tua pada Siswa SLTP di Pinggir dan Pusat Kota. Kota Semarang. J Univ Muhammadiyah Semarang.
- Anggraini, F. D., Hikmawati, N., & Wahyuningsih, S. (2023). Hubungan Antara Status Gizi dengan Usia Menarche pada Remaja Siswi Kelas 4, 5, dan 6 di SDN Dawuhan Lor 01 Kecamatan Sukodono Lumajan.
- Alam, S., Syahrir, S., Adnan, Y., & Asis, A. (2021). Hubungan Status Gizi dengan Usia Menarche pada Remaja Putri. *Jurnal Ilmu Kesehatan Masyarakat*, 10(03), 200-207.
- Amita Diananda. (2018). Psikologi Remaja Dan Permasalahannya. 1(1), 116–133.
- Aulia, N., & Auliah, A. (2023). Pengetahuan Agama, Gaya Hidup, Dan Menarche Dini Pada Pelajar Sekolah Dasar.
- Bobak, I.M. (2004). Keperawatan Maternitas. Alih Bahasa Maria A. Wijaya Rini. Edisi 4. Jakarta : EGC
- Bobak, Lowdermilk, Jensen. (2004). Buku Ajar Keperawatan Maternitas / Maternity Nursing. Edisi 4. Alih Bahasa Maria A. Wijayati, Peter I. Anugerah, Jakarta : EGC
- BKKBN dan BPS (2019) Survei Kinerja dan Akuntabilitas Program (SKAP) Remaja. Jakarta: Puslitbang KB dan KS.
- Balqis, C., Handayani, D., Sulisty, Y., & Abdullah, S. A. (2023). Gambaran Pengetahuan Dan Pengalaman Menstruasi Remaja Putri Di Provinsi Jawa Timur. *Jurnal Cakrawala Ilmiah*, 2(11), 4353-4360.
- Clayton, S.G. (2008). Menstruation. *Encyclopædia Britannica*, Inc.
- DP, G. M. (2015). Konsumsi Junk Food dan Pubertas Dini. *Jurnal Majority*, 4(8), 117-120.
- Elyandri, T. G., & Permatasari, T. A. E. (2023). Hubungan Status Gizi Dan Faktor Lainnya Dengan Kejadian Menarche Dini Pada Remaja Putri Di YAPA Al-Isti'aaanah Kabupaten Bogor. *Tirtayasa Medical Journal*, 2(2), 54. <https://doi.org/10.52742/tmj.v2i2.19445>
- Enggar. (2018). Biologi Dasar Manusia dan Pengantar Asuhan Kebidanan. Yogyakarta, Indonesia: Pustaka Panasea. URL: <https://onesearch.id/Record/IOS8185.INLIS00000000064502>
- French, L. (2005). Dysmenorrhea. *American Academy for Family Physicians*, 71(2), 285-291.
- Fajria, L., & Desi, N. M. (2014). Gambaran Faktor Penyebab Menarche Dini Pada Siswi SMPN 4 Kota Pariaman. *Ners Jurnal Keperawatan*, 10(1), 11-19.
- Fitri, I. (2017). Lebih Dekat Dengan Sistem Reproduksi Wanita. Yogyakarta, Indonesia: Gosyen Publishing.
- Galbinur, E., Defitra, M. A., & Venny. (2021). Pentingnya Pengetahuan Kesehatan Reproduksi Bagi Remaja di Era Modern.
- Indarna, A. A., & Lediawati, L. (2021). Usia Menarche Dan Lamanya Menstruasi Dengan Kejadian Dismenore Primer Pada Siswi Kelas X Di Smk Kesehatan Bhakti Kencana

- Subang Age Menarche And The Time Of Menstruation With The Primary Dismenore Events In Class X Students Smk Kesehatan Bhakti Kencana Subang.
- Jannah Nurul, dkk. (2017). Kesehatan reproduksi & Keluarga Berencana. Jakarta, Indonesia: EGC.
- Khomsan. (2014). Peranan Pangan dan Gizi untuk Kualitas Hidup. Jakarta, Indonesia: PT Gramedia Widiasarana Indonesia.
- Kusmiarti, M., Merta I., & Bahri, S. (2016). Studi Pengetahuan tentang Menstruasi dengan Upaya Penanganan Disminore pada Mahasiswa Pendidikan Biologi. *Jurnal Pijar MIPA*, XI(1).
- Kusumawati, I., dkk. (2022). Menarche . Palembang & Tasikmalaya: Politeknik Kesehatan Kemenkes.
- Lestari, W. D., Masrikhiyah, R., & Sari, D. R. (2022). Hubungan Gaya Hidup, Status Gizi, dan Asupan Makanan dengan Kejadian Menarche Dini pada Siswi MTS Darul Abror. *Jurnal Pendidikan Tambusai*, 6(2), 14650-14666.
- Listyowati, N. (2013). Hubungan Antara Faktor Sosial Ekonomi, Pola Konsumsi Dan Status Gizi Dengan Usia Menarche Di Daerah Perkotaan Dan Pedesaan Kabupaten Jember.
- Mukhoirotin, M., & Sulayfiah, T. N. (2020). Analisis Faktor yang Berhubungan dengan Kejadian Menarche Dini. *Journal of Bionursing*, 2(1), 33-38.
- Manuaba, G. B. I. (1999). Memahami Kesehatan Reproduksi Wanita. Jakarta, Indonesia: Arcan.
- Munir, M., PS, D. K., Suhartono, S., Safaah., & Utami, A. P. (2022). Metode Penelitian Kesehatan.
- Nurlaily, E. Z., & Nindya, T. S. (2016). Hubungan Antara Status Gizi Dan Kerutinan Olahraga Dengan Kejadian Dismenore Pada Remaja Putri. *Jurnal Ilmiah Kebidanan (Scientific Journal of Midwifery)*, 2(2), 21–31.
- Nurfadhilah, N., & Auliah, A. (2023). Pengetahuan Agama, Gaya Hidup, Dan Menarche Dini Pada Pelajar Sekolah Dasar. *Rausyan Fikr: Jurnal Pemikiran dan Pencerahan*, 19(1).
- Nurrahmaton, N. (2020). Hubungan Gaya Hidup Dengan Kejadian Menarche Dini Pada Remaja Putri Di Smp Amanah Medan. *Jurnal Midwifery Update (MU)*, 1(2), 39-49.
- Nursalam. (2020). Metodologi Penelitian ilmu keperawatan. Salemba Medika.
- Nuroniyah, W. (2019). Fikih Menstruasi Menghapus Mitos-mitos dalam Menstrual Taboo. Depok: PT Rajawali Buana Pusaka.
- Proverawati, A., & Maisaroh, S. (2009). Manarche, Menstruasi Pertama Penuh Makna. Yogyakarta, Indonesia: Medika Yogyakarta.
- Putri, R. L. D., & Melaniani, S. (2014). Factor Analysis of Early Menarche Age Relations. *Jurnal Biometrika dan Kependudukan*, 2(1), 42–50.
- Puspita, I., Rosyidi, M., & Wahyuni, S. (2015). Faktor-Faktor Yang Mempengaruhi Kesiapan Remaja Putri Menghadapi Menarche Di SDN 02 Sukorejo Semarang. *Perpusnwu.Web.Id*, 1–13.
- Putri, R. M., Novitadewi, N., & Maemunah, N. (2020). Usia Menarche dari Sudut Pandang Konsumsi Fastfood dan Paparan Media Porno. *Jurnal Akademika Baiturrahim Jambi*, 9(1), 54-63.
- Reisy, L., Alipour, E., & Nikjou, R. (2021). The effect of lifestyle on Menarche age among 11 to 14 year old girls in Ardabil. *Scientific Journal of Nursing, Midwifery and Paramedical Faculty*, 7(1), 37-45.
- Rusmini, dkk. (2017). Pelayanan Dan Kesehatan Reproduksi Evidence Based. Jakarta, Indonesia: Trans Info Media.
- Riskesdas. (2018). Riset Kesehatan Dasar (RISKESDAS) 2013. Laporan Nasional 2018. Retrieved from [www.depkes.go.id](http://www.depkes.go.id).

- Riskesdas. (2013). Riset Kesehatan Dasar (RISKESDAS) 2013. Laporan Nasional 2013. Retrieved from [www.depkes.go.id](http://www.depkes.go.id).
- Safitri, D., & Wati, A. (2014). Analisis Indikator Gaya Hidup yang Berhubungan dengan Usia Menarche Remaja Putri. *J Online Mhs Progr Stud Ilmu Keperawatan Univ Riau*, 1(2), 1–10.
- Safitri, D., Arneliwati, & Erwin. (2014). Analisis Indikator Gaya Hidup yang Berhubungan dengan Usia Menarche Remaja Putri. *JOM PSIK*, 1(2), 286-291.
- Selviyanti. (2018). Hubungan Antara Indeks Massa Tubuh (IMT) Dengan Usia Pertama Kali Menstruasi (Menarche ) Pada Remaja Di SMPN 2 Nekamese. *CHMK Health Journal*, 2(April), 12–17.
- Suzanne, C. S. (2001). *Keperawatan Medikal Bedah*, Edisi 8. Jakarta, Indonesia: EGC.
- Sinaga, E., & others. (2017). *Manajemen Kesehatan Menstruasi*. Universitas Nasional IWWASH Global One.
- Setiyaningrum, E., & others. (2014). *Pelayanan Keluarga Berencana Dan Kesehatan Reproduksi*. Jakarta, Indonesia: CV. Trans Info Media.
- Sugiyono. (2022). *Metode Penelitian Kuantitatif*. Bandung, Indonesia: Alfabeta.
- Sugiyono. (2020). *Metode Penelitian Kualitatif*. Bandung, Indonesia: Alfabeta.
- Septiani, M., & Rahmi, N. (2022). Hubungan Tingkat Kecemasan dengan Gangguan Menstruasi Pada Remaja Putri di MTs Darusa'adah Cot Tarom Kabupaten Bireuen. *JOURNAL OF HEALTHCARE TECHNOLOGY*.
- Soetjningsih. (2010). *Tumbuh Kembang Remaja dan Permasalahannya*. Sagung Seto.
- Tari, E., & Tafonao, T. (2019). Tinjauan Teologis-Sosiologis terhadap Pergaulan Bebas Remaja. *DUNAMIS: Jurnal Teologi dan Pendidikan Kristiani*, 3(2), 199. doi:10.30648/dun.v3i2.181.
- Upadhyay, K., Dhok, A., & Jaiswal, A. (2019). Impact of changing lifestyle on age of Menarche . *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, 8(6), 2261-2266.
- Utami, Y. M. (2021). *Pengaruh Korean Pop (K-Pop) Terhadap Perilaku Remaja di Desa Gumelar Kecamatan Balung Kabupaten Jember [Doctoral dissertation, Fakultas Dakwah Program Studi Bimbingan dan Konseling Islam]*.
- Yuwono, N., & Gusto Benyamin, Y. (2021). Epidemiologi Pubertas. *Prosiding FK: Gerakan Anak Muda Lindungi Reproduksi Indonesia*, 70(3), 360–374. doi:10.31857/S0044467720030107.
- Yatim, W. (2001). *Reproduksi dan Embriologi*. Bandung, Indonesia: Tarsito.
- Yanti, Ferianto, Qonitun, FD Yunita. (2024) *Pengaruh Pendidikan Kesehatan Reproduksi Terhadap Kecemasan Menghadapi Menarche Pada Siswi Di SDN Kecamatan Plumpang*