



## The Correlation between Junk Food Consumption and Age of Menarche of Elementary School Student in Gedung Johor Medan

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### Abstract

Acceleration age of menarche, can increase the chances of endometrial hyperplasia. The incidence of uterine and breast cancer are associated with early menarche. Junk food is indicated as one of the triggers of early menarche. With observational-analytic research and case-control research design, it was conducted to determine the effect of junk food in early menarche at elementary school student. The population of the study was the 6th grade elementary school students who had been menstruated, yet the sample was chosen randomly. Data collected using questionnaires, also measuring weight and height, then analysed using chi-square. The results shows a relationship between junk food consumption with early menarche incidence ( $p = 0.021$ ) and OR 1.889. This is due to the high consumption patterns of junk food/fast food in teenages. Affected by behavioral patterns of people who tend to choose practical food, easy to get and ready to eat.

### Abstrak

Percepatan usia menarche dapat memperbesar peluang terjadi hiperplasia endometrium. Insiden kanker uterus dan kanker payudara dihubungkan dengan menarche dini. Junk food diindikasikan sebagai salah satu pemicu menarche dini. Dengan penelitian observasional-analitik dan desain penelitian case-control, dilakukan untuk mengetahui pengaruh junk food pada menarche dini di usia SD. Populasi penelitian adalah siswi SD kelas VI yang sudah haid /belum, sampel dipilih secara random. Pengumpulan data menggunakan kuesioner kepada siswi, menimbang berat badan serta mengukur tinggi badan. Analisis data menggunakan chi-square. Hasil penelitian bahwa ada hubungan konsumsi junk food dengan kejadian menarche dini ( $p=0,021$ ) dan OR 1,889. Hal ini disebabkan Tingginya pola konsumsi junk food/fast food pada remaja dipengaruhi oleh pola perilaku masyarakat yang cenderung memilih makanan praktis, mudah didapat dan siap saji.

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## INTRODUCTION

The first age of menstruation in women or menarche, recently has changed, it is moving to a younger age. The sooner a teen gets a menarche, so, she will more faster to know about the sexual life, starts to interested on male, the urge to know and engage in sexual activity. This condition can increasing the risk of pregnancy, abortion, and last can affects the rate of maternal mortality. The more higher of maternal mortality rate, influenced by especially abortion and teenage pregnancy. Beside that, the accelerated menarche age can increase the chances of endometrial hyperplasia. The incidence of uterine and breast cancer are also associated with early menarche, obesity, cardiovascular disease, metabolic disorders and psychological disorders (Stopeck et al., 2011; Mukti, 2014).

The factors that can affect the early menarche are nutritional status, genetic, high calorie and high fat consumption, socioeconomic, adult mass media exposure (pornography), sexual behavior and lifestyle (Kaplowitz, 2008).

Favorite food of teenagers is a fast food. Fast food is a food that contains high calorie and fat. Fast food has an unbalanced nutritional content that contains high calories, high fat, low fiber and high sugar. Fast food includes french fries, hamburgers, soft drinks, pizza, hot dogs, donuts and so on.

The report of Basic Health Research (*Riskesdas*) 2013 was known that 20.9% of girls in Indonesia are already menarche at age less than 12 years old. Based on the preeliminary survey, conducted at three elementary schools in the Gedung Johor urban village with 30 students as a sample. Can conclude that 19 of them menstruated at the age of 12 years old and 11 of them already got their first menstruation at 9 to 11 years old. The results of interview to 30 students, can be known they are like to eat fast foods in the school, such as eating meatballs, roasted and fried sausages, instant noodles, fried chicken, and other types of snacks.

Early menarche is associated with risk factors for some malignant diseases. In terms of clinical, the age of early menarche is a risk factor for ovarian cancer, endometrial hyperplasia, and pregnancy at a younger age. The incidence of uterine cancer and breast cancer is also associated with age of menarche by hormonal reasons, which is dominated by estrogen. While the psychological impact of menarche on young women, will arise feelings of anxiety and fear, the feelings of guilt also sin. That are related to the process of bleeding and the presence the assumption, that they were dirty and suffering from a disease.

Consumption of junk food in teenagers will affect increasing a nutrition. Generally, fast food

contains high calorie, fat, sugar, and sodium (Na) content; but low in fiber, vitamin A, ascorbic acid, calcium and folate.

Teenage girls with excess nutrients (high fat and weight) can influence earlier menarche. Nutrition has an effect on human sexual maturity. Because nutrition affects secretion of gonadotropin and giving a response to Luteinizing Hormone (LH). LH serves the secretion of estrogen and progesterone in the ovaries, so that, the secondary sex signs will quickly emerge. Its compared to undernourished teenage girls (Kaplowitz, 2008).

## METHODS

This research is observational-analytic with case-control design. The population of this research was the female students of grade 6. Student that already menstruation and not. Samples were selected randomly. Sample divided into two groups. One group of menarche students and the other group of students who have not menarche. Ratio of menarche : non-menarche was 1: 1. Sharing the same questionnaire to the sample.

The type of data collected in this study is primary data. A data that obtained directly by using questionnaires. Including the age of menarche and junk food consumption. Data analysed using univariate, then continued with bivariate using chi-square test. With 95% confidence level ( $p < 0.05$ ) and looked at odds ratio to compare between test result from case and control group.

## RESULTS AND DISCUSSION

The aim of this research is to know the effect of junk food on the occurrence of early menarche. Research had done to a group of sixth-grade elementary school. Characteristics of sixth grades of the elementary school in Gedung Johor urban village, Medan Johor District of 2017, can be seen in Table. 1.

From the Table 1. shows that, there is a correlation between the habit of consuming junk food  $> 2 \times 1$  week with early age of menarche. The result of chi square test shows p-value ( $p = 0.021$ ). The result of analysis obtained by OR = 1.889. It means by consuming more junk food  $> 2 \times 1$  week, will have a probability 1,889 times to early menarche compared with student who only consumed junk food  $\leq 2 \times 1$  week.

Based on chi-square test results obtained p-value of 0.021 with the OR value of 1.889. It means there is a relationship of junk food consumption with the age of menarche and teenage who consume junk food  $> 2$  times in 1 week. The possibility of ear-

Table. 1 Distribution of Junk Food Consumption Correlation With The Age of Menarche in Grade VI of Elementary School in Gedong Johor Medan Johor District in 2017.

Age of Menarche	Frequency of Junk Food Consumption				OR (95% CI)	<i>p value</i>
	> 2 x 1 Week		≤ 2 x 1 Week			
	N	%	N	%		
< 12 years old	17	26	15	23	1.889	0.021
≥ 12 years old	12	19	20	31	(0.697-5.120)	
Total	29	45	35	54		

ly menarche is 1.889 times, compared with students who do not consume junk food  $\leq 2$  times a week. This happens because students that eat junk food in the abnormal category, that is more than twice a week. It is also influenced by the ease of fast food and influenced by the pattern of behavior of people; who choose practical food, easy to get and ready to eat.

This study is consistent with the opinion that teenage girls, who start puberty and before menarche often consume junk food also snack outside the home, will lead to increased high-calorie intake. Significantly, increased of BMIs are greater when girls often eat junk food and snack more than 2 times per week, than those with little or no consumption. Eating junk food contains 1000 calories per serving. Excessive junk food consumption before menarche will affect the increasing of BMI also increasing a luteal phase. This study is supported by the research from Putri & Melaniani (2013). An analysis of relationship of menarche age factors, stated eating junk food is a dominant factor with the age of menarche (Kaplowitz, 2008; Quennel et al, 2009).

According to Kaplowitz (2008), if the body fat exceeds that required for normal body function then there will be accumulation. Resulting in more weight than normal and hormones formed by fat, will spur menstruation come earlier. Junk food contains many artificial sweeteners, fats, and additives that can cause menarche earlier. Consumption of high-fat foods will result in accumulation of fat tissue in the adipose tissue. So that, it is associated with increased levels of leptin. The process of estrogen hormone formation is influenced by a certain intake of fat used to ovulate that cause menarche comes earlier.

Consumption of junk food in teenage girls give an affect the increase of teenage nutrition. Generally, fast food contains high calorie, fat, sugar, and sodium (Na) content but low in fiber, vitamin A, ascorbic acid, calcium, and folate. Teenage girls with excess nutrients (excess fat and weight), it makes menarche occur earlier. Nutrition has an effect on human sexual maturity. Because its nutrition affects of gonadotropin hormone secretion and response to Luteinizing Hormone (LH). This hormone serves

for the secretion of estrogen and progesterone in the ovaries, so that, secondary sex signs will quickly emerge compared to undernourished teenage girls (Morris et al, 2010).

Modern life style, the availability of a restaurant with a large selection of fast food, junk food, packaged food will lead to accelerated menarche. Because the consumption of fast food and soft drinks contain high fat, sugar, and calories. Foods that contain high fats will lead to weight gain in teenage girls and estrogen levels will increase. Due to high cholesterol in which the hormone estrogen is a specific hormone. Releasing of specific hormones is essential for mental and physical growth (Kaplowitz, 2008; Quennel et al, 2009).

Changed situation on a woman during puberty is controlled by the hypothalamus, a certain part of the human brain. More or less before the girl has menstruation, the hypothalamus begins to produce a chemical, or what we call the hormone that it releases. The first hormone will generated, that is FSH (Follicle Stimulating Hormone). This hormone stimulates the growth of follicles containing egg cells in the ovaries. FSH will stimulate the follicle, and it will produce an estrogen. Estrogen helps maturing the breast and reproductive organs of teenage girls (Merida, 2013; Archarya, 2009).

Increasing levels of estrogen in the blood, gave an effect on the hypothalamus. It called negative feedback. This, causes a decrease in FSH factor. But it also makes the hypothalamus release the second substance, the release factor of the luteinized hormone. In turn, this causes the gland in the brain to release the hormone (LH, Luteinizing Hormone). LH hormone causes one of the follicles to break and release the egg to allow fertilization. Remaining follicles are known as "corpus luteum". The corpus luteum subsequently produces estrogen. Then begins to secrete a new substance called "Progesterone". Progesterone will prepare a baseline of the uterus to receive and feed the fertilized egg. If the egg is not fertilized, the level of estrogen and progesterone in the bloodstream will degenerate. Causing the baseline to be cracked, this process due to bleeding. Occures when the first menstruation (Susanti, 2012; Rizal, 2016).

Based on the interaction among hormones, can conclude that there is a correlation between junk food consumption and age of menarche. This can happen because junk food or fast food contains high calorie, high fat, sugar and sodium (Na) content, vitamin A, ascorbic acid, calcium and folate. High levels of fat in the body or excess, that required for normal body function. It gives a result an accumulation of fat in the body, more than a normal weight and hormones. Formed by fat, such as estrogen, which is a specific hormone in the maturation of the organs reproduction and spurs menstruation to come early. So, need to set a balanced diet to regulate hormone balance in the body. A teenage girls can menarche at a normal age (Quennell, 2009; Kaplowitz, 2008).

It necessary to know, because of the age of menarche can happens too early and associated with risk factors for health problems. Decreasing age of menarche will give an impact on women's reproductive health, especially teenage reproductive health. Sooner, a teen gets a menarche, she will faster to know the sexually active life. Start to like a male, urge to know, and engage in sexual activity. It can increases the risk of teenage pregnancy, teenage abortion, and affects maternal mortality rate. Especially through abortion and teenage pregnancies. Early menarche is at risk for psychological disturbance in a teenage girls and a risk factor of breast cancer (Kaplowitz, 2008; Archarya, 2009; Morris, 2010).

## CONCLUSION

Based on the results of research of junk food consumption, and its correlation with the age of menarche at elementary school students in Gedung Johor Medan Johor district in 2017. There is a correlation between junk food consumption and the age

of menarche. Students who consume junk food > 2 times a week are more likely to have a earlier menarche, compared with students who consumed junk food ≤ 2 times in 1 week.

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