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The Relationship of Appetite and Emesis to Weight Gain Pregnancy

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Abstract

In general, 70-80% of pregnant women experience emesis or nausea and vomiting which decreased appetite and nutritional intake of pregnant women. Whereas nutrition really contributes to the growth and development of the fetus, children after birth to adulthood. Pregnant women who are thin and gain less weight during pregnancy will increase the risk of giving birth to babies with low birth weight (LBW). This study aims to analyze the relationship between appetite and emesis to the weight gain of pregnant women. This research is a cross sectional study conducted in Pekanbaru City. The research respondent were 91 pregnant women who met the inclusion criteria, namely pregnant women who had a record of early pregnancy weight in the KIA book. Measurement of appetite and emesis using a modified questionnaire from the Simplified Nutrition Appetite Questionnaire (SNAQ) and Pregnancy-Unique Quantification of Emesis (PUQE-24) Scale which was carried out online related to the 2020 COVID-19 pandemic. The results showed that there was a relationship between appetite and weight gain in the 1st trimester of pregnancy. While there was no relationship between emesis and weight gain. This is because the average respondent of pregnant women does not experience appetite and emesis which are at risk. In addition, the gestational age of 62.6% of respondents, namely at the age of the third trimester, tended to have improved appetite and did not experience emesis. In addition, there has also been an increase in weight gain.

1. Introduction

Maternal and child (first 2 years) nutrition as knows as the first 1000 days, is decribed as the process and mecanisms by which nutrition-related dietary intake and behaviors and the environment determine health and risk of disease in later life (Saavedra & Dattilo, 2022) . The problem of fulfilling nutrition begins in pre-conception, when a teenager becomes a mother who is malnourished and anemic. Based on Riskesdas data in 2018, the proportion of risk of chronic lack of energy in women of childbearing age in 2018 was 17.3% for pregnant women of childbearing age and 14.5% for non-pregnant women of childbearing age. Furthermore, at the beginning of pregnancy which is the starting point in the First 1000 Days of Life

period, namely the nutritional status of the mother at the beginning and during pregnancy. According to the 2014 National Survey of Individual Food Consumption (SKMI) most pregnant women (urban and rural) as well as socio-economically (quintiles 1-5) have problems with food intake, both energy and protein. The nutritional problems of prospective pregnant women and during pregnancy have an impact on babies born to be malnourished with low birth weight < 2500 grams and body length < 48 cm. Riskesdas data in 2018 shows the proportion of LBW is 6.2% and birth length < 48 cm is 22.7% (KEMENKES, 2018).

One of the causes of low nutritional intake of pregnant women is nausea which is very common in half of pregnant women. The complaint is called emesis gravidarium which often occurs on an empty stomach and often during the day and night nausea and vomiting begins between the first and second menstruation delays and continues until 4 weeks of gestation. Nausea and vomiting are experienced by pregnant women and an average of 10% lasts for 35 days, half of them improve by the 14^{th} week of gestation and 90% by the 22^{nd} week (Novianti, Ahisa; Purwanintyas, 2013). The results of other studies show that about 70% of pregnant women will experience nausea at some point. The causes of morning sickness are emotions, hormonal changes, which increase the acidity of the stomach. Previous research on complaints during pregnancy showed that complaints of nausea with a total incidence of 80% were not always accompanied by vomiting with a total incidence of 60% (Indreswari, Hardinsyah, & Damanik, 2008).

Complaints of nausea are the cause of decreased appetite, so that weight gain is not in accordance with gestational age and nutritional status in early pregnancy which then increases the risk of maternal and child morbidity and mortality both during the delivery process and after birth. A cohort study of mother and child in Norway showed that pregnant women with complaints of emesis had a significantly lower intake and risk of nutritional problems (nutrition deficiency) which could be predicted using the PUQE-score (Birkeland et al., 2015). Therefore, the researcher intends to conduct a study of the relationship between appetite and emesis on weight gain of pregnant women.

2. Literature Review

Pregnancy is a continuous chain, starting from ovulation (cell maturation), then the meeting of the ovum (egg) with spermatozoa (sperm) then fertilization occurs. The zygote then implant in the uterus and the formation of the placenta, growth and development of the products of conception up to term (Manuaba, 2012). The gestation period starts from the end of menstruation period until the birth of the baby, about 266-280 days or 37-40 weeks consisting of three trimesters, namely trimester 1, trimester 2, and trimester 3. The period of pregnancy development consists of three stages. The first stage, the development of the zygote is the formation of cells, the division of the zygote is the formation of cells, the division of cells into blastocytes, and implantation. The second stage, embryonic development, is from differentiation to organogenesis. The third stage, the development of the fetus or the growth of the baby. The process of pregnancy causes the mother's body to experience changes from its pre-pregnancy condition. Changes occur in the regulatory mechanisms and functions of body organs which include physiological, metabolic, and anatomical changes.

Previous studies have shown the importance of nutrition in fetal growth and development, especially in the First 1000 Days of Life period, namely the gestation period of 270 days and 730 days from birth to 2 years of age. The impact of the First 1000 Days of Life on physical, mental and intelligence growth is permanent and cannot be corrected. Physical growth failure such as permanent stunting as a result of the First 1000 Days of Life is supported by research results that show a very close relationship between fetal linear growth and/or factors that affect fetal linear growth during pregnancy and postnatal or postnatal linear growth (Bernard, J. Y., De Agostini, M., Forhan, A., Alfaiate, T., Bonet, M., Champion, V., 2013).

During pregnancy, the mother's nutrients are transferred to the fetus through the placenta. The growth of the fetus in the womb is very dependent on the nutritional intake of the mother. Pregnant women who suffer from malnutrition, especially Chronic Energy Deficiency (CED) are at risk of giving birth to babies with low body weight and have an impact on the growth and development of children, intellectual development, and productivity in the future.

Maternal nutritional status in early pregnancy and weight gain during pregnancy play an important role in fetal growth because the fetus responds to maternal diet and maternal food stores early in pregnancy and this will contribute to the health status of the child (after birth) into adulthood[1]. The results of the research in Uruguay showed that the nutritional status of the mother at the beginning of pregnancy in the underweight category (BMI <18.5 kg/m2) was one of the predictors of stunting with an OR value of 2.5 (Bove I, Teresa M, Cristina C, Ricardo U, 2012).

Weight gain during pregnancy is the change in body weight during pregnancy from conception to delivery. The relationship between weight gain during pregnancy and the child's health status (after birth) is supported by the results of research showing that thin pregnant women and experiencing low or less weight gain during pregnancy will increase the risk of giving birth to babies with Low Birth Weight (LBW) obese pregnant and experiencing high or excessive weight gain during pregnancy will increase the risk of giving birth to a baby with a large birth weight (LBW) or macrosomia (Yu et al., 2013). Weight gain during pregnancy that was less than recommended was significantly and independently associated with giving birth to LBW babies with an OR value of 2.72 after adjustment (Akahoshi E, Kazuhiko A, Kiyonori M, Takayuki N, Yasuyo A, Naoko Y, Kazuyo O, Hideaki M, 2016).

Nausea and vomiting are usually most severe in the first trimester of pregnancy, which is a common disorder experienced by 50% of pregnant women. Vomiting occurs when the chemoreceptor trigger zone or vomiting center in the medulla, located on the lateral wall of the fourth ventricle, is stimulated. Nausea and vomiting during pregnancy are usually caused by changes in the endocrine system that occur during pregnancy, mainly due to increased fluctuations in levels of HCG (Chorionic Gonadotropin Hormone) in particular because the most common period of gestational nausea and vomiting is the first 12-16 weeks of age at that time. HCG reaches its highest level. Symptoms of vomiting will get worse in a molar pregnancy or twin pregnancy. Some pregnant women have these symptoms more often when they wake up, so they are often called morning sickness. In others, the symptoms of nausea and vomiting continue throughout the day.

Appetite is defined as a strong urge or desire for food. Appetite is related to the smell, taste, appearance, and attractiveness of food which is considered a metaphor for the feeling of wanting or liking certain foods. Appetite is different from hunger because appetite is the result of sensory cell reactions or psychological conditions that inadvertently stimulate physiological responses. While hunger is a physical reaction that involves changes in body chemistry, for example a decrease in blood glucose levels. In conditions of holding back hunger can cause problems such as dizziness and weakness due to hypoglycemia (low sugar levels). Decreased appetite is at risk for weight loss (Wilson et al., 2005)

3. Methods

This research is a cross-sectional study, namely the cause or risk and effect variables or cases that occur in the research object are measured or collected simultaneously (at the same time). The study was conducted in Pekanbaru City with the number of respondents being 91 pregnant women who met the inclusion criteria, namely pregnant women who had a record of early pregnancy weight in the MCH book. Measuring appetite and emesis using a modified questionnaire from the Simplified Nutrition Appetite Questionnaire (SNAQ) and Pregnancy-Unique Quantification of Emesis (PUQE-24) Scale which was carried out online related to the COVID-19 pandemic condition in 2020. After the data is obtained, data tabulation will be carried out and analyzed with SPSS program for correlation test and error level of 0.05%.

4. Result

Based on the research, it was found that 93.4% of mothers were between 21-35 years old; 60.4% of mothers have a college education background; 58.3% working; 48.3% were first pregnancies; and 62.3% entered the third trimester of pregnancy. Based on the univariate analysis of the variables of appetite, emesis, and weight gain, it was found that the average SNAQ score was 11.92 which means that the appetite of pregnant women is not at risk. The SNAQ score is said to be at risk of losing weight 5%. The average value of the PUQE24 score is 6.63, which means that pregnant women's emesis complaints are included in the mild category (including the moderate category with a score of 7-12). Based on the table of appetite normality, emesis, and gestational weight gain, it was obtained that the value of $p = 0.000$, because the value of $p < 0.05$, it can be concluded that the distribution of appetite, emesis, and gestational weight gain were not normally distributed. So the hypothesis test is a non-parametric test.

Bivariate analysis showed that there is no relationship between both of appetite and emesis to the gestational weight gain. However the results of the correlation analysis between SNAQ and GWG scores in first trimester pregnant women obtained a significance value of 0.015. This means that there is a significant relationship between appetite and gestational weight gain in first trimester pregnant women.

5. Discussion

Based on previous research, it was found that there was a relationship between knowledge of pregnant women in meeting nutritional needs and increasing body weight of pregnant women. This is supported by the background of higher education so that it is easier to absorb the knowledge of pregnant women

and apply the fulfillment of the nutritional needs of pregnant women. In this study, the educational status of the mother is 40.6% of pregnant women with elementary-junior-high school education and 60.4% of pregnant women with tertiary education. The lower education related to the pregnant woman nutrition so that they can't fulfilled the nutrition needs which increased for growth of the womb. Based on previous research, it shows that the research results of working mothers have the ability to recognize family health problems, have the knowledge and ability to make decisions to overcome health problems. Therefore, mothers who act as workers as well as wives and housewives generally have better health (Ernawati, 2018). In this study, The employment status of mothers is 41.7% working mothers and 58.3% mothers not working. The working mothers can exposed the knowledge from the circle of the works which can support each others however the not working woman can't get the nutrtion knowledge unless they have a high motivations to do research.

The results of previous studies that nausea and vomiting are usually most severe in the first trimester of pregnancy are a common disorder experienced by 50% of pregnant women (Holmes, D., & Baker, 2011). Maternal gestational age was 12.1% in the first trimester, 25.3% in the second trimester, and 62.6% in the third trimester. This might be the cause of an unspecific relation both to the apetite and emesis to the weight gain. The results of previous studies shows that emesis knowledge has a strong positive relations to gestational weight gain of the first trimester. However, in this study, there is no relationship between both of them, this may be due to the respondent's gestational age (pregnant women), namely in the third trimester because in the third trimester there is an increase in appetite and the rate of weight gain is stable because it has entered the end of pregnancy.

Nutritional status in early pregnancy, namely 62% of pregnant women included in the category of normal nutrition, 20% over nutrition, 8% very over nutrition, and 10% undernourished. This may cause the statistical test results to show that there is no relationship between appetite, emesis, and pregnancy weight gain. The nutritional status of early pregnancy is not good, showing that lack of nutritional intake in the first trimester is associated with a high incidence of premature births, fetal death, and abnormalities in the baby's central nervous system(Darawati, 2016). Based on the previous studies, it has been explained that the characteristics of mothers have shown a good direction, namely higher education, good jobs, urban residences that support health facilities such as health information and affordable health services. So as to minimize the occurrence of decreased appetite and emesis which have an impact on pregnancy weight gain and the risk of fetal growth and development as well as after birth. The results of previous studies showed that there was no statistically significant relationship between nutritional status in early pregnancy and the presence of stunting because the nutritional status data at the time of the first ANC used in the study could not describe the actual nutritional status in early pregnancy (Erowati, 2019).

Pregnancy weight gain was 81% overweight and 19% underweight. The calculation of weight gain carried out in this study was based on IOM recommendations 2009 by analyzing pregnancy weight gain based on nutritional status in early pregnancy. The results showed that 81% of pregnant women had experienced pregnancy weight gain which was more than the recommendation

(Johnson et al., 2014). It is also possible that the statistical test results showed that there was no relationship between appetite, emesis, and pregnancy weight gain.

6. Conclusion

The results showed that there was a relationship between appetite and weight gain in the 1st trimester of pregnancy. While there was no relationship between emesis and weight gain. Further research needs to be done with special respondents for first trimester pregnant women.

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