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Weight Gain Pattern During Pregnancy among Women Attending for Normal Labor at Makasar Primary Health Care, Jakarta

Research Article

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Abstract

Background: Maternal nutritional stutus before and during pregnancy were important for optimal pregnancy outcomes. Institute of Medicine had already published guideline for proper weight gain during pregnancy. Women in Jakarta, a metropolitan area of Indonesia, are in relatively younger age of marriage. Previously, its was reported that maternal nutritional stutus among young mother was poor. Thus, this study aimed to know the pattern of weight gain among pregnant women in Jakarta setting.

Methods: This study was a retrospective study using medical records ofpregnant women undergone normal labor in Makasar Primary Health Care, Jakarta during 2014. The data included in this study are pre-pregnancy weight, body mass index, and weight gain during pregnancy. Institute of Medicine recommendation was used to classify maternal body weight gain.

Results: A total of 128 medical records were included in this study. We found that the majority of pregnant women had poor weight gain (71 subjects, 55.5%) compared to ideal weight gain (39 subjects, 30.4%) and excessive weight gain (18 subjects, 14.1%). Most subjects in underweight and normoweight women had poor weight gain compared to overweight and obese women (p<0,001). Body mass index before pregnancy was correlated with body weight gain (r= -0.374, p<0,001).

Conclussion: Most of women attending fornormal labor in Makasar Primary Health Carehad poor weight gain during pregnancy.

Keywords: Body mass index; Normal labor; Pregnancy; Primary health care; Weight gain

Introduction

Nutritional status before and during pregnancy are considered important for optimal pregnancy outcomes regarding optimal newborn birthweight and maternal body weight after pregnancy [1]. Previous study showed that excessive weight gain during pregnancy was associated with increased risk of maternal hypertension during pregnancy, gestational diabetes, caesarean delivery, preeclamsia, haemorrhagic post-partum events, macrosomia, neonatal hypoglicemia, and even intrauterine fetal death [1,2]. However, inadequate maternal weight gain during pregnancy was also detrimental for the newborn as it would increase the risk of having low birth weight newborn, prematurity, problems related to infant's growth and development, and risk of physical disability later in lifetime. To date, Institute of Medicine (IOM) had published recommendation for optimal maternal weight gain during pregnancy

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based on maternal body mass index (BMI) before pregnancy [1].

From Indonesia Demographic and Health Survey 2012, it was shown that the median age at first marriage among Indonesian reproductive women was quite younger, 20.4 years old [3]. Shirima et al. showed that maternal nutritional status among younger mother was poor. Also, younger mother tend to be anemic and thus correlated with newborn birth weight [4]. Therefore, we performed study in Jakarta population to know maternal nutritional status during pregnancy reflected by weight gain. Knowing maternal nutritional status among pregnant women and associated factors in this setting would be beneficial for further intervention in high risk population.

Materials and Methods

Study desain

This was a retrospective study using medical records of pregnant women undergone normal labor at Makasar Primary Health Care, Jakarta from January to December 2014. Medical records were collected consecutively. Inclusion criteria were mothers with normal labor (no complication, full term baby >37 weeks of gestation age, and performed vaginal delivery). Samples with severe preeclampsia, stillbirth, or without antenatal care records were excluded. Also, medical records with incomplete data of weight before, at the end of first trimester, at the end of second trimester, and before delivery were excluded.

Data collection

The data collected from medical records included characteristics (age and level of education), frequency of antenatal care (ANC) visit, gestational week for the first ANC visit, haemoglobin (Hb) level at first trimester, and serial body weight during routine follow-up of ANC visits. Weight before pregnancy data were noted in medical record based on interview to the mother while serial measurements were noted from weighing directly. Tolerance up to two weeks was used in determining trimester, otherwise the data were not counted. BMI were then calculated using modification for Asian population proposed by World Health Organization [5]. IOM recommendation was adopted to estimate ideal body weight gain for pregnant women. Underweight women (BMI< 18.5 kg/m2 is ideally gain 12.7-18.1 kg during pregnancy, normal weight women 11.3-15.9 kg, overweight women 6.8-11.3 kg, and obese women5.0-9.0 kg [1]. Maternal age were also classified regarding risks of pregnancy outcomes with maternal age 20-34 considered to have lesser risk [6]. Mother were considered anemic if Hb level for the first trimester was below 11 g/ dl [7].

Statistical analysis

Statistical analysis were done using SPSS 16 (Statistical Package for Social Science, Chicago, Inc.) for windows. Numeric data were test for normality of the distribution using Kolmogorov-smirnov test. Normally distributed data were presented as mean \pm standard deviation while non-normally distributed data were presented as median (minimum-maximum). Chi-square test was used to find association between category of BMI and category of weight gain. All correlation were also tested using either Pearson or Spearman correlation tests if the data were normally or non-normally distributed, respectively. P value <0.05 was considered significant.

Results

A total of 128 pregnant women were included in this study as they fulfilled the inclusion and exclusion criteria. As many as 110 subjects (85.9%) were in 20-34 age group. Most of subjects (126 subjects, 98.4%) had minimally four ANC visits at Makasar Primary Health Care. Mean BMI of subjects was 22.9 ± 4.3 kg/m². Characteristics of subjects including maternal BMI and adequacy of weight gain were presented in Table 1.

Median weight gain during pregnancy was 9,0 kg (-11.0 - 25 kg). Three subjects lose weight during pregnancy. Using IOM recommendation, more than half of subjects failed to gain recommended weight (71 subjects, 55.5%). Underweight and normoweight women tend to had poor weight gain during pregnancy compared to overweight and obese women (p<0,001, Table 2). Weight gain was correlated with BMI before pregnancy (r= -0.374, p<0,001). Level of education, age at higher risk, anemic status, frequency of ANC visit did not assocaited with weight gain category (p>0.05).

Discussion

The main finding of this study was although nearly all subjects had minimal of four ANC visits, majority of pregnant women in Jakarta, metropolitan area of Indonesia, failed to achieve recommended body weight gain during pregnancy. We also found that BMI before pregnancy had significant correlation with weight gain.

Our study was perfomed in developing country with more than five percent baby born as low bith weight baby [3]. In contrast to our finding, Deputy et al. performed a study in America and found that majority of women increase weight gain in excessive manner

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Variable	Category	Percentage (%)
A.g.o.	less risk (20-35 year old)	110 (85,9%)
Age	risk (<20 atau>35 year old)	18 (14,1%)
Loval of advantion*	Junior high or below	24 (23.8%)
Level of education	high school or higher	77 (76.2%)
ANC frequency	<4 times	2 (1,6%)
ANC fiequency	≥4 times	126 (98,4%)
Lib first trimostor	<11 g/dL	7 (9,3%)
	≥11 g/dL	68 (90,7%)
	Underweight	19 (14.8%)
BMI	Normoweight	53 (41.4%)
	Overweight	16 (12.5%)
	Obese	40 (31.3%)

*Twenty-seven subjects did not have level of education noted in medical records

Table 2: Weight gain pattern among subjects.

BMI before pregnancy	Weight gain during pregnancy			
	Poor	Ideal	Excessive	
Underweight (%)	12 (63.2)	6 (31.6)	1 (5.3)	
Normoweight (%)	41 (77.4)	10 (18.9)	2 (3.8)	
Overweight (%)	5 (31.3)	7 (43.8)	4 (25.0)	
Obese (%)	13 (32.5)	16 (40.0)	11 (27.5)	
Total	71	39	18	

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(47.2%). They also found that many factors including race, level of education, and also BMI before pregnancy associated with weight gain in that population [8]. Another study in America found that 43.7% population were categorized as having excessive weight gain and only 22% considered as poor weight gain. Interestingly, they found thatmajority of pregnant women with excessive weight gain were obese before pregnancy [9].

Our result also similar to Winkvist et al. study. They found that in rural area in Purworejo, Centra Java, BMI before pregnant, level of education, and level of socio-economic status was associated with poor weight gain during pregnancy [10]. We proposed that different populations have different habbit, pattern of eating, faith about prohibition of food during pregnancy and food supply in specific area [10], however, most of rural and metropolitan population also failed to gain recommended weight gain.

The importance of maternal weight gain should be emphasizedby physician facing pregnant women. Indonesia is currently shifted toward implementation of universal health coverage with full implementation in 2019. Thus, primary health care is fundamental to deliver good health care, including toward pregnant women. Monitoring maternal weight gain during pregnancy plays pivotal role as it correlated with newborn birth weight [11,12]. In this study, although pregnant women fulfilled minimum of four ANC visit, they still could not met recommendation. Therefore, physician in primary health care should addressed this problem so that mother could had optimal weight gain and hopefully would deliver optimal infant. Primary health care as a frontier of health system had a responsible to prepare mother prior pregnancy especially their nutritional status. From previous study, BMI was associated with population knowledge regarding optimal food serving size [13]. In Jakarta setting, physician might not only rely on mother's level of education. Also, maternal preparation including good nutrition before pregnancy is important.

This study had several limitations. Firstly, This study only conducted in a single primary health care in Jakarta. Given the total number of PHC in district level, the generalization to other setting is limited. This result, however, still beneficial for other community settings which have comparable characteristics. Secondly, we could not addressed the nutritional intake status among subjects as we only measured outcomes of nutritional mainly BMI. The weight before pregnancy data were based on interview to the mother thus it might be under- or overestimate from the exact ones. This was due to lack of medical data record because visiting physician was not routinely done by most Indonesian people. We also lack information of macronutrient and micronutrient status. Maternal perception and knowledge of food and nutrition were also not analyzed.

Conclusion

This study found that majority of pregnant women in Jakarta, metropolitan area of Indonesia, failed to gain recommended weight gain during pregnancy. Maternal BMI before pregnancy was correlated with body weight gain during pregnancy.

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