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DETERMINANT OF CHRONIC ENERGY MALNUTRITION OF PREGNANT WOMEN AT KARANG BANDAR LAMPUNG HEALTH CENTER

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ABSTRACT

Background: *The most common nutritional problem experienced by pregnant women is Chronic Energy Deficiency (CED), which may be caused by nutritional intake consumed, socio-economic and history of disease / infection before becoming pregnant. But the cause of CED is not only a problem of lack of food but also due to the influence of lifestyle, workload and nutritional status of the mother during pregnancy. This study aims to determine the relationship between lifestyle during pregnancy, workload during pregnancy, nutritional status during pregnancy with Genesis CED in Pregnant Women.*
Methodology: *Quantitative research method with cross sectional design. The population of this study were all pregnant women who checked their pregnancy at the Public Health Center Karang City Bandar Lampung. Sampling technique using total population sampling is as much as 40 people. Data was collected through primary (questionnaire) and secondary (KIA book) data collection. Data analysis was performed using chi-square test.*
Results: *Results of this study showed that there was no significant relationship between lifestyle with the CED incidence in pregnant women. Meanwhile, the results showed that workload and nutrition were significantly associated with the CED incidence in pregnant women.*
Conclusion: *This study recommends that there is a need for coordination between puskesmas and city health offices to provide supplementary food for pregnant woman and provide education to woman about the importance of nutrition during pregnancy before marriage, such as counseling in order to prevent CED occurrence during pregnancy.*

Keywords: Chronic Energy Deficiency, lifestyle, workload, pregnancy

INTRODUCTION

Pregnancy is a new beginning of a growth period. Nutrition is one factor influencing pregnancy's outcome. If nutritional status of pregnant woman is normal on period started pre-pregnancy and in-pregnancy, it has high possibility to bear healthy, fixed born month, and normal weight baby. In another word, quality of the born baby depends on nutritional status of a mother during pregnancy [1].

The most common problem suffered by pregnant women is Chronic Energy Malnutrition (CEM). It is a condition where an individual suffers malnutrition (calorie and protein) lasting in long period or years indicated by LILA < 23.5 cm. According to K. Mallikharjuna Rao in India, that causal factors of pregnant and breastfeeding women is nutritional consumption, economy social, and nutritional status during pregnancy [2]. And according to Muliawati, 2013 in Boyolali, there were correlative factors to CEM occurrence: family incomes, education background of a mother, age of a mother, parity, and health

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records of a mother. The result showed income as the most frequent found factor causing CEM with percentage 53.3% [3].

World Health Organization (WHO) reported that prevalence of pregnant women suffering CEM was 27.6% and increased by the age of pregnancy. According to Basic Health Research (RISKESDAS) 2013, prevalence of CEM risk on fertile women in Indonesia increased significantly in 2007. At that time, pregnant women suffering CEM were 9.1% and increased into 24.2% in 2013. According to the research, the cause was not only malnutrition but also life style [4].

Life style is an individual attitude shown within activity, interest, and opinion, especially dealing with self-image to reflect her social status. It covers physical activities, social life, communication and dietary habit (the amount of consumed meal, varieties, and the types), and alcohol and smoking habit of a mother [5].

It is estimated that 11% of premature birth and 14% lower weight of born babies are caused by smoking habit of pregnant women. A finding in India showed mortality rate of death born babies was 5% happened on smoking pregnant women. It was higher than those non-smoking pregnant women (1.7%). However, it was not only smoking to cause lost weight of born babies. Finding in Aceh described passive smoking pregnant women were exposed to 1 – 10 cigarettes per day had 2.4 times risk greater to bear low weight babies. Any pregnant woman exposed more than or equal to 11 cigarettes per day had 3.1 times risk to bear low weight babies than those whom were not exposed [6].

Woman contribution in economy field seems increasing day by day, both in domestic economy and national economy. However, their responsibilities within family will never decrease. It is called to have multiple roles. Therefore, it causes higher workloads of women and influences their health. Then, health level influences morbidity, reproduction organ health, and premature mortality [7]. According to a research, 54.8% bearing mothers in Local Public Hospital Sidoarjo had burdening workloads. It was caused by their choices to have shifting pattern jobs, longer working time > 7 hour or > 49 hours per week, working at factory with average breaking time 1 hour, and working to lift or move goods. Besides that, after finishing their jobs, they still had to do their domestic jobs such as cooking, sweeping, and washing without other individual's assistances [8].

Nutritional status of pregnant women is important to achieve wellbeing of both mother and their fetus. It is considered as the most important regulator of fetus growth. A healthy other will bear healthy babies [9]. Malnutrition effects on mother does not only influence the mother but also their babies. Low weight of babies is a problem caused by malnutrition during pregnancy. It absolutely has negative effect on fetus. Nutritional status pre-pregnancy and in-pregnancy may influence fetus growth. If the status is normal within pre-pregnancy and in-pregnancy, there is high possibility to bear healthy, fixed months, and normal weighted baby. In another word, the quality of born baby depends on nutritional status of mother started from pre-pregnancy and in-pregnancy [10].

Basic Health Research (Riskesdas, 2010) about nutritional status of > 18 year old citizens showed nationally percentage of thin individuals was 21.8%, normal 69.8%, overweight 4.0%, and obesity 4.4%. BHR data (Riskesdas, 2013) about nutritional status of 18 year old citizens showed nationally percentage of thin individuals was 8.7%, overweight 13.5%, and obesity 15.4% [11].

The data of Lampung in 2015 about pregnant women suffering CEM was 6.196 (3.51%). In Bandar Lampung, it was on the first rank dealing with pregnant women suffering CEM, 1.250 individuals (6.09%) [12].

Based on the previous studies done by the author in Karang Bandar Lampung, there were increasing number of pregnant women suffering CEM. In 2015, there were 51 women and in 2016 increased to 60 pregnant women suffering CEM. The data on January – March 2017, there were 30 pregnant women suffering CEM with LILA < 23.5 cm. Based on the data, there was a need to investigate correlation of life style, workload, and nutritional status of pregnant women to CEM occurrence in Kota Bandar Lampung health center in 2017. The purpose was to find out the correlation among life style, workload, and nutritional status of pregnant women to CEM occurrence there.

METHODS

This research was conducted in Kota Bandar Lampung health center started from May 22, 2017. There were two variables: CEM suffered by pregnant women as dependent variable and life style, workload, and nutritional status of the women as independent variables. This quantitative with *cross sectional* design measured and observed simultaneously. The population was all pregnant women checking up their pregnancy at the health center from May – July. The method of collecting data was *total sampling* by taking all population based on inclusive criterion was pregnant women whom checked up their pregnancy at the health center within I-III three semester and willing to be respondents. Meanwhile, the exclusive criterion was the pregnant women checking up to the health center but having no intention to be respondents. Then, the non-inclusive criterion was pregnant women within I-III three semester who did not live in research site, consisting of 40 people. The data was primary data (questionnaire distribution) and secondary data (maternal and child health book). Data analysis was done by chi-square test. The instrument was questionnaire. Before distributing the questionnaire, the researcher explained the steps of filling up questionnaire to respondents. The researcher waited them until they had completed all questionnaire.

Instrument trial run was done to find out its validity and reliability. Thus, it was pilot tested in term of validity and reliability to the respondents by using analyzing tool assistance by using SPSS version 18. The data analysis used SPSS by univariat and bivariate data analysis. Data presentation used narration (sentences) or by giving written notes and using tabulation – by giving numerical explanation and data arranged into rows and columns.

FINDINGS

Table 1. Distribution of CEM Frequency, Life Style, Workload, and Nutritional Status during Pregnancy at Kota Karang Bandar Lampung Health Center in 2017

Variable	N	%
CEM		
Yes	30	75
No	10	25
Life Style		
Poor	23	57,5
Good	17	42
Workload		
Heavy	26	65
Light	14	35
Nutritional Status		
Poor	29	72,5
Good	11	27,5

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From the table, 30 of 40 respondents (75%) suffered CEM while the remaining, 10 (25%) did not suffer CEM with normal LILA > 23.5 cm. Life style variable of general mother whose poor life style, from 40 respondents, 23 of them (57.5%) had bad life style. Meanwhile, those with good life style during pregnancy, 17 (42.5%) people. Workload variable showed most of them had heavy workload. 26 respondents (65%) did heavy workload during pregnancy and 14 respondents (35%) did lighter workload. Then, nutritional status showed 29 of them (72.5%) had poor nutritional status and 11 (27.5%) had proper nutritional status during pregnancy.

Correlation of Life Style during Pregnancy to CEM Occurrence of Pregnant Women

Table 2. Correlational Analysis of Life Style during Pregnancy to CEM Occurrence on Pregnant Women

Variable	CEM Occurrence of Pregnant Women				Total		P-value	OR
	CEM		Not CEM					
	N	%	N	%	N	%		
Life Style								1,500
Poor	18	60	5	50	23	57,5	0,853	(0,356-6,323)
Good	12	40	5	50	17	42,5		

The table about correlation of life style to CEM occurrence at the health center in 2017 showed 18 individual (60%) suffering CEM had poor life style during pregnancy. Meanwhile, 5 of 10 women (50%) did not suffer CEM had proper life style during pregnancy. Statistical test gained P *value* = 0.853 (P value $>\alpha = 0,05$), meaning H_0 is denied. It is concluded that there was no influence of life style to CEM occurrence. It was also gained OR 1.500, meaning pregnant women with poor life style had chance 1.5000 (1.5) times higher to suffer CEM.

Correlation of Workload during Pregnancy to CEM Occurrence of the Pregnant Women

Table 3. Correlational Analysis of Workload of the Pregnant Women to CEM Occurrence

Variable	CEM Occurrence on Pregnant Women				Total		P-value	OR
	CEM		Not CEM					
	N	%	N	%	N	%		
Workload								16,000
Heavy	24	80	2	20	26	65	0,002	(2,674-95,754)
Light	6	20	8	80	14	35		

The table shows correlation of workload during pregnancy to CEM occurrence at the health center. There were 24 (80%) women suffering CEM had heavy workload during pregnancy while 8 (90%) of 10 women did not suffer CEM and had lighter workload during pregnancy. Statistical test with P *value* = 0.002 (P value $>\alpha = 0.05$), meaning H_0 is denied. It is concluded there was influence of workload to CEM on the pregnant women. It was also gained OR 16.000, meaning that the pregnant women with heavy WL had chance 16.000 (16) times higher to suffer CEM.

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Correlation of Nutritional Status to CEM Occurrence of the Pregnant Women

Table 4. Analysis of Nutritional Status to CEM Occurrence of the Pregnant Women

Variable	CEM Occurrence of Pregnant Women				Total		P-value	OR
	CEM		Not CEM					
	N	%	N	%	N	%		
Nutritional Status during Pregnancy							0,000	36,000
Poor	27	90,0	2	20,0	29	100		(5.094-254.408)
Good	3	10,0	8	80,0	11	100		

The table shows correlation of nutritional status to CEM occurrence of the pregnant women. There were 27 (90%) suffering CEM had poor nutritional status during pregnancy. Meanwhile, there were 8 (80%) of 10 women did not suffer CEM and had proper nutritional status. Statistical test gained P *value* = 0.000 (P value $<\alpha = 0.05$), meaning H₀ is denied. It is concluded there was influence of nutritional status to CEM of the pregnant women. It was also gained OR 36.000, meaning the pregnant women with poor nutritional status had chance 36.000 (36) times higher to suffer CEM

DISCUSSION

The research gained P *value* = 0.853 (P value $>\alpha = 0.05$), meaning there was no influence of life style to CEM occurrence. In medicine field, it is acknowledged that smoking mothers during pregnancy may cause lost weight of their born babies and increasing number of baby mortality as well as spontaneous abortion. It is not only about health but also development of fetus which may be disturbed due to the life style of the mothers. However, according to Basic Health Research (Riskesdan, 2013), prevalence of CEM risk of fertile pregnant women in Indonesia had significant increasing number, in 2017 pregnant women suffering CEM 9.1%. Meanwhile, in 2013, it reached 24.2%. The measurement of CEm risk for both WUS and pregnant women had been frequently found on teenagers (15-19 years) [13].

Study by Ausa, E *et al.* titled dietary habit and social economy status with CEM occurrence of pregnant women in Gowa in 2013 showed the amount of energy consumption or amount and quality of consumed food was the most influential factor affecting CEM with p *value* = 0.005.

Based on author's assumption, the absence of life style correlation during pregnancy to CEM at the health center was because CEM was a condition occurred within lengthy period. It meant a pregnant woman suffered CEM during pregnancy was seen from previous life style of pregnant women.

Therefore, there is a need to develop research to investigate correlation of life style of pregnant women seen from pre-pregnancy with CEM occurrence of the pregnant women. Then, dealing with solution to overcome life style, it needs socialization about better life style, especially for female teenagers to prevent CEM during pregnancy.

This research showed correlation between workload during pregnancy to CEM of the pregnant women with P *value* = 0.002 (P value $>\alpha = 0.05$), meaning there was influence between workload to CEM of the pregnant women.

Woman contribution to economy field increases day by day, both in domestic and national economy. However, their responsibilities will not decrease. To do households are more tiring than to do jobs in the office. It is called multiple roles. It caused workload of the women increasing. Pregnancy and no pregnancy of the women cannot be equalized although they similar woman jobs. Pregnant female worker

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needs limitation and lighter workload to keep their health and safe. It has purpose to avoid any fatigue. It may influence their health level also. As it has been known, health influences productivity of an individual. It also influences to morbidity, reproduction health, and premature mortality [14].

It is supported by Suparsih (2012). From bivariate analysis, it was gained correlative variable to CEM of the pregnant women, one of them is workload ($p = 0.001$).

Similar study by Rizka Aprilia (2015) titled "Various Factors Correlating to CEM of Pregnant Women in BPM Ny. Sri Widyaningsih, Am. Keb Lemahireng Village, Bawen District, Semarang". There was influence between workload to CEM with p value 0.013 ($\alpha = 0.05$).

The author assumes the correlation of workload to CEM of pregnant women was due to many respondents working from morning to afternoon so they ignored dietary habit schedule because they were busy. Heavy workload and poor balance of nutritional and balance consumption during working time and multiple roles of women created malnutrition problem especially during reproduction time.

A program needed by the health center to promote special program for pregnant women and teenagers in giving socialization dealing with pregnancy, especially the impacts of heavy workload owned by pregnant women.

This research investigated nutritional status during pregnancy to CEM occurrence. It gained P *value* = 0.000 (P value < $\alpha = 0.05$), meaning there was influence of workload to CEM occurrence.

Nutrition within pregnancy is important. Nutritional problem of pregnant women still becomes focus of attention. The problems are such as anemia and CEM occurrence. CEM had risk to lower muscular power to help bearing process so it could cause lengthy parturition and bleeding after bearing or even death. Risk of baby may cause miscarriage, premature, born disabled, and lower weight baby. However, there are still many pregnant women having nutritional problems such as Chronic Energy Malnutrition (CEM) and nutritional anemia 15]. It is supported by Siti Indrawati 92015) discussing nutritional status of pregnant women with LWB occurrence. Chi-square test showed there was meaningful relationship of pregnant women to LWB in Minggir health center. The correlation was 0.000, meaning p < 0.05. It was known that nutritional status of pregnant women with CEM risk (LILA < 23.5 cm) about 55 individuals (53.9%) with nutritional status not owning CEM risk (LILA > 23.5 cm) about 47 people 46.1% [16].

Similar research by Alfred EN (2017) showed its Chi-Square result nutritional staus of pregnant women on initial stage of pregnancy based on LILA. Most of them were non CEM, 78.6^, with normal weigh baby born 81.1%, normal baby length 60.7%, with significant level between LILA and LWB was p = 0.000 (p < 0.05), and LILA with length of baby born p = 0.020 (p < 0.05). It is concluded there was significant influence between nutritional status based on LILA with LILA and LWB plus LBB.

The author assumed influence between nutritional statuses during pregnancy to CEM of the pregnant women that when nutritional status was poor, it was indicated by LILA < 23.5 cm, with CEM risk on pregnant women. Besides LILA, indicators of sufficient nutritional status were increasing weight during pregnancy. It showed whether pregnant women had poor nutritional stauts, normal or even over.

CEM of pregnant women have many risk caused by need of nutritional status improvement during pregnancy to prevent CEM. Health center must prioritize programs related to improvement of nutritional status of the pregnant women.

CONCLUSION

It is concluded there was no influence between life style (P-value = 0.853) to CEM occurrence of the pregnant women. Meanwhile, there was influence of working load (P-value = 0.002) and nutritional status during pregnancy (P-value = 0.000) to CEM occurrence. Further research with large number of sample and lengthy time is needed to investigate life style of WUS before what kind of pregnancy has CEM potency during pregnancy.

SUGGESTION

Health center should provide programs prioritizing health of pregnant women, especially dealing with nutritional problems to prevent CEM occurrence and to decrease it in the future. The programs may be such as: socialization of how to have better life style for female teenagers to prevent CEM during pregnancy, socialization to fertile aged women especially pre-pregnancy nutritional preparation, promote nutritional clinic as nutritional monitoring place and nutritional consultation place for pregnant women with nutritional problems with CEM risk, collaborate with health agency of the city to promote supplementary feeding for pregnant women suffering CEM, promote special class of pregnant women to provide socialization dealing with impacts caused by pregnant women with heavy workload during pregnancy.

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