



## COMPARATIVE STUDY OF PERCEPTIONS OF PREGNANT WOMEN WITH CHRONIC ENERGY DEFICIENCY (CED) ON THE FULFILMENT OF NUTRITION IN THE PREVENTION OF STUNTING IN SEMARANG CITY

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### ABSTRACT

The development of human resources (HR) is strongly influenced by nutritional factors. The impact of malnutrition on pregnant women leads to low birth weight babies (LBW), malnutrition in toddlers and even stunting. This study aims to determine whether there are differences in the perceptions of pregnant women with chronic energy deficiency on nutritional fulfilment in stunting prevention based on stunting cases in Semarang City. This type of research is quantitative research with analytical observational research using a comparative study approach. The data collection method in this study was interview using a questionnaire that has been prepared by the researcher based on the Health Belief Model theory. The sample in this study were pregnant women with Chronic Energy Deficiency (CED) who were in the health centre with the highest stunting cases and the health centre with the lowest stunting cases, a sample of 50 respondents was taken for each health centre with stunting cases using total sampling. Data were collected by meeting pregnant women with Chronic Energy Deficiency through pregnant women's classes and door to door accompanied by health workers. Based on the results of the analysis, the data were not normally distributed so the data analysis used the Mann-Whitney u test and the significance level ( $p = 0.05$ ). The results showed that there were differences in the perceived barrier to action of pregnant women with Chronic Energy Deficiency (CED) on the fulfilment of nutrition in preventing stunting based on differences in stunting cases namely ( $p$  value 0.033), then other variables did not show differences.

Keywords: chronic energy deficient pregnant women; nutrition; perception; stunting

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### INTRODUCTION

The development of human resources is strongly influenced by nutritional factors. The impact of malnutrition on pregnant women leads to low birth weight babies (LBW), malnutrition in toddlers and even stunting. World Health Organization (WHO) data for 2022 shows that the prevalence of stunting (stunted) in children under five is 22.3% (World Health Organization, 2022). The results of the Indonesian Nutrition Status Survey (SSGI) in 2022 show that the prevalence of stunting in Indonesia is 21.6% (Kemenkes RI, 2022). The prevalence of stunting at this rate is still very high when compared to the standards set by WHO namely the number of stunting cases should not exceed 20% (Prakoso et al, 2021). According to the results of the Indonesian Nutrition Status Survey (SSGI) in 2021 the prevalence of stunting in Central Java was 20.9% and in 2022 it was 20.8%. The prevalence of stunting in Semarang

City in 2021 was 21.3% and in 2022 was 18.7% (Kemenkes RI, 2022). The prevalence of stunting in these figures has not been able to achieve the national target of RPJMN 2024. In RPJMN 2024, the stunting prevalence is targeted to decrease to 14%. The results of Semarang City's Community-Based Nutrition Recording and Reporting (EPPGBM) 2019-2023 show that the highest cases of stunting among children under five are in several sub-districts in Semarang City, such as North Semarang Sub-district, East Semarang Sub-district and Pedurungan Sub-district. The lowest cases of stunting among children under five are also located in several sub-districts in Semarang City, such as Gayamsari Sub-district, Tugu Sub-district, and Genuk Sub-district (Semarang City Health Office, 2022). The sub-district is located in Semarang City, which has a diverse geographical location, population density, education, and economy. Data from the Semarang City Health Office, shows that the sub-district also has cases of pregnant women with Chronic Energy Deficiency (CED). Chronic energy deficiency is a risk factor for pregnant women in Semarang City. Research conducted by Apriani et al in 2019, showed that there was a significant relationship between the history of pregnant women with Chronic Energy Deficiency (CED) and the incidence of stunting in toddlers (Apriani et al, 2021).

The behaviour of pregnant women with Chronic Energy Deficiency (CED) will affect mothers in meeting nutritional needs during their pregnancy as a form of preventive behaviour against stunting (Noor & Muniroh, 2023). The cause of nutritional problems in pregnant women is the behaviour of pregnant women who are not good at fulfilling nutritional needs so that it becomes a contributing factor to nutritional problems in children such as stunting. This is in accordance with the results of the preliminary study found that pregnant women are lacking in consuming nutrients because they always experience nausea and vomiting so that they often have no appetite and tend to skip diverse foods in accordance with the principles of balanced nutrition. this of course causes pregnant women Chronic Energy Deficiency (CED) nutritional deficiencies during pregnancy. Blum in 1974, explained that behaviour is the second largest factor affecting the health of individuals, groups and communities, after environmental factors (Notoatmodjo, 2014).

Chronic Energy Deficiency (CED) pregnant women will cause the process of fetal growth and development to be inhibited, triggering mothers to be at risk of giving birth to LBW babies. LBW babies are at risk of stunting later in life. Previous research shows that mothers who have a history of Chronic Energy Deficiency (CED) during pregnancy will affect the growth and development process of the baby in the womb (Aobama & Purwito, 2020). The Health Belief Model is one of the theories of a person's behaviour consisting of sociodemographic factors (age, gender, knowledge, attitude, education, income, etc) and six facets of thinking within the individual, namely perceived susceptibility, perceived severity, perceived benefit of action, perceived barrier to action, cues to action and self-efficacy. Previous research shows that there is a positive and statistically significant relationship between stunting and perceived vulnerability and perceived severity. This health behaviour model can be used to identify the behaviour of pregnant women with Chronic Energy Deficiency (CED) on the fulfilment of nutrients in an effort to prevent stunting in the district. This study aims to determine whether there are differences in the perceptions of pregnant women with chronic energy deficiency on nutritional fulfilment in stunting prevention based on stunting cases in Semarang City.

## **METHOD**

This type of research is quantitative research with analytical observational research using a comparative study approach. The comparative method was used to determine whether there are differences in the behaviour of pregnant women with Chronic Energy Deficiency (CED)

in fulfilling nutrition in preventing stunting based on differences in stunting cases in Semarang City. The method of data collection in this study is interviews using a questionnaire that has been prepared by researchers based on the Health Belief Model theory and has been tested for validity and reliability. The samples in this study were pregnant women with Chronic Energy Deficiency (CED) who were in the highest stunting case areas namely North Semarang, East Semarang, and Pedurungan sub-districts and the lowest stunting areas namely Gayamsari, Tugu. and Genuk sub-districts, which were conducted from September to November 2023. The inclusion criteria for this study were pregnant women with Chronic Energy Deficiency (CED) who had a pregnancy check-up/visit at Bandarharjo, Bulu Lor, Karangdoro, Tlogosari Wetan, Tlogosari Kulon, Gayamsari, Karanganyar, Genuk, and Bangetayu Health Centres. And the exclusion criteria are Chronic Energy Deficiency (CED) pregnant women who refuse to be respondents and Chronic Energy Deficiency (CED) pregnant women suffering from chronic diseases and congenital abnormalities in the fetus. In this study, the total population in both groups was 104 respondents. The sampling method uses total sampling, which is based on the total population that meets the inclusion criteria, namely 50 respondents for each group. Data were collected by meeting pregnant women with Chronic Energy Deficiency through pregnant women's classes and door to door accompanied by health workers. Based on the results of the analysis, the data were not normally distributed so the data analysis used the Mann-Whitney u test and the significance level ( $p = 0.05$ ). This research has received approval to pass ethical review from the Health Research Ethics Commission, Faculty of Public Health, Diponegoro University with number 518/EA/KEPK-FKM/2023.

## RESULTS

Table 1.  
Frequency Distribution of Respondent Characteristics

Characteristics of Respondents		Health Centres with High Stunting Cases		Health Centres with Low Stunting Cases	
		f	%	f	%
Age group	<20 years	7	14.0	2	4.0
	20-35 years	38	76.0	47	94.0
	>35 years	5	10.0	1	2.0
Last education	Not in School	1	2.0	0	0.0
	Elementary School	6	12.0	4	8.0
	Junior High School	7	14.0	8	16.0
	Senior High School	28	56.0	32	64.0
	Higher Education	8	16.0	6	12.0
Total Family Members	Many ( $\geq 4$ )	31	64.0	26	57.0
	Little ( $< 4$ )	19	38.0	24	43.0
Family Income	Mean $\pm$ SD	3.086.000 $\pm$ 1.202.210		3.274.000 $\pm$ 2.310.915	
Mum's occupation	Housewife	37	74.0	44	88.0
	Self-employed	7	14.0	2	4.0
	Private employee	4	8.0	2	4.0
	Teacher	1	2.0	0	0.0
	Labour	1	2.0	2	4.0
Gravida	First Pregnancy	26	52.0	34	68.0
	Second Pregnancy	15	30.0	11	22.0

Characteristics of Respondents		Health Centres with High Stunting Cases		Health Centres with Low Stunting Cases	
		f	%	f	%
	Third Pregnancy	8	16.0	4	8.0
	Fourth Pregnancy	1	2.0	0	0.0
	Fourth Pregnancy	0	0.0	1	2.0
Pregnancy Age	First Trimester	2	4.0	6	12.0
	Second Trimester	21	42.0	16	32.0
	Third Trimester	27	54.0	28	56.0
LILA size	18-19.5 cm	6	12.0	3	6.0
	20-21.5 cm	26	52.0	25	50.0
	22-23.5 cm	18	36.0	22	44.0

Table 1, it shows that pregnant women with Chronic Energy Deficiency (CED) in health centres with high and low stunting cases, most of the respondents with the age group of 20-35 years were found more in health centres with low stunting cases (94.0%), respondents who had the latest high school education level were found more in health centres with low stunting cases (64.0%), respondents who had many family members ( $\geq 4$ ) were found more in health centres with high stunting cases (64.0%), respondents who had an average family income a month were found more in health centres with low stunting cases namely Rp. 3.274.000, respondents who had jobs as housewives were found more in health centres with low stunting cases (88.0%), respondents who had a job as a housewife were more likely to be found in puskesmas with low stunting cases (88.0%), respondents who had the first pregnancy were more likely to be found in puskesmas with low stunting cases (68.0%), respondents who had the third trimester of pregnancy were more likely to be found in puskesmas with low stunting cases (56.0%), and respondents who had a LILA size of 20-21.5 cm were more likely to be found in puskesmas with high stunting cases (52.0%).

Table 2.  
Mann-Whitney Test Results

Research variables	Health Centre with High Stunting Cases		Health Centre with Low Stunting Cases		P value
	f	Mean rank	f	Mean rank	
<i>Perceived suscepbility</i>	50	55.00	50	46.00	0.070
<i>Perceived Severity</i>	50	52.50	50	48.50	0.426
<i>Perceived benefit of action</i>	50	50.50	50	50.50	1.000
<i>Perceived barrier to action</i>	50	55.50	50	45.50	0.033
<i>Perceived self-efficacy</i>	50	49.50	50	51.50	0.566
<i>Cues to action</i>	50	53.00	50	48.00	0.319

Table 2 shows that there is no difference between Perceived susceptibility of pregnant women with a value of  $p = 0.070$ , there is no difference between Perceived Severity of pregnant women with a value of  $p = 0.426$ , there is no difference between Perceived benefit of action of pregnant women with a value of  $p = 1.000$ , there is a difference between Perceived barrier to action of pregnant women with a value of  $p = 0.033$ , there is no difference between the self-efficacy of pregnant women with a value of  $p = 0.566$ , and there is no difference between the cues to action of pregnant women in fulfilling nutrition in preventing stunting based on differences in stunting cases in Semarang City with a value of  $p = 0.319$ .

## **DISCUSSION**

The perception of susceptibility and perceived severity of pregnant women with Chronic Energy Deficiency (CED) in high and low stunting case health centres shows that most respondents have a high perception of vulnerability so there is no difference between pregnant women Chronic Energy Deficiency (CED) in high and low stunting case health centres. However, this study is not in line with research conducted by Ichsan et al in 2023, namely there is a relationship between the perception of maternal vulnerability and the prevention of stunting. The high level of perceived vulnerability of pregnant women about toddlers experiencing stunting will influence mothers to meet nutritional needs during their pregnancy as a form of preventive behaviour against stunting (Noor & Muniroh, 2023). The perception of high vulnerability of Chronic Energy Deficiency (CED) pregnant women in this study can be influenced by good knowledge and attitudes of Chronic Energy Deficiency (CED) pregnant women. A person's perception can be influenced by knowledge or information obtained about nutrition (Prastiwi et al, 2018).

The high perception of pregnant women with Chronic Energy Deficiency (CED) can also be influenced by the characteristics of respondents, namely age and the latest education of pregnant women with Chronic Energy Deficiency (CED). In the age range of 20-35 a person is in a mature period, a person can already make a choice and can solve problems in their life (Durkin, 1995). The perception of each individual is also supported by formal education. In this study, most respondents were at the last good level of education, namely high school and college levels. In formal education there is a process of developing and fostering skills that a person has programmatically and consciously, so that the higher the education, the more the process of direction and development that a person goes through and gets which can affect their perception (Toha, 2007). So that it can affect the perception of pregnant women with Chronic Energy Deficiency (CED). In line with research conducted by Hayati et al in 2021, it shows that the high perception of pregnant women is caused by maternal characteristics such as maternal age and maternal education (Hayati, 2021). Pregnant women who have a high perception of susceptibility and perceived severity are more likely to have children who are not stunted while low perceptions are likely to have stunted children. The more a person feels vulnerable to a disease, the better the preventive measures will be, Rosenstock's 2005 concept in the Health Belief Model theory states that the perception of susceptibility and perceived severity of someone who has a health problem will affect their actions in preventing disease (Rosenstock, 2015).

The perceived benefits of pregnant women with Chronic Energy Deficiency (CED) at the puskesmas for high and low stunting cases show that most respondents have a high perception of benefits so that there is no difference between pregnant women with Chronic Energy Deficiency (CED) at the puskesmas for high and low stunting cases. This study is not in line with research conducted by Wardani et al 2022, shows that there is a relationship between perceived benefits and maternal behaviour in preventing stunting. The high level of perceived benefits will influence mothers to meet their nutritional needs during pregnancy as a form of preventive behaviour against stunting (Wardani & Harumi, 2022). High perceived benefits of pregnant women can be influenced by good knowledge and attitudes of pregnant women with Chronic Energy Deficiency (CED). A person's perception can be influenced by the knowledge or information obtained. Perception is one of the factors that influence the formation of a person's behaviour (Sari et al, 2021). The perception of benefits is also influenced by the perceived vulnerability and perceived seriousness of the mother. The higher the perception of vulnerability and perception of seriousness, the higher the perceived benefits in fulfilling nutrition so that it can support the prevention of stunting (Hupunau et al, 2019). The

perception of benefits is high because pregnant women with Chronic Energy Deficiency (CED) feel that behaving well during pregnancy will have a good impact on the health of the mother and her child. Respondents have a high perceived benefit of preventing stunting, because a person's belief in the efforts available in reducing the threat of disease or perceived benefits will increase positive perceptions of disease prevention behaviour (Indah, 2020). The perception of benefits is high because pregnant women with Chronic Energy Deficiency (CED) think that implementing preventive behaviour can reduce the threat of stunting in toddlers. However, even though pregnant women with Chronic Energy Deficiency (CED) have a high perception of benefits but are not supported by high economic status, it is likely that they will experience obstacles to taking action in stunting prevention efforts. Research conducted by Yanti in 2023, showed that low family economic status has a significant impact on the fulfilment of family nutrition (Yanti, 2023).

The existence of differences in perceptions of higher barriers in Chronic Energy Deficiency (CED) pregnant women in puskesmas with high stunting cases can occur because respondents think that when performing nutritional fulfilment behaviour in preventing stunting will cause difficulties, both psychosocial difficulties due to the mother's busyness, physical due to difficulties in getting to health services and financial, which is related to the costs that will be incurred by the mother to behave healthily. When someone is going to do a behaviour, one must believe that the obstacles experienced when taking preventive action are smaller than the consequences (Noor & Muniroh, 2023). Perceived barriers in this study measure the time sacrificed, the costs incurred by mothers and the difficulty of performing routine health behaviours and the difficulty of getting to health services. Research conducted by Indah et al in 2020, showed that there was a relationship between perceived barriers and the incidence of stunting (Indah, 2020). The main reason individuals do not change health behaviour is because they think that doing so will cause difficulties (Noor & Muniroh, 2023). Then based on the characteristics of the respondents, pregnant women with Chronic Energy Deficiency (CED) have economic constraints in terms of fulfilling nutrition as a prevention of stunting. Family income is still relatively low with a large number of family members ( $\geq 4$  people). So that this can be the cause of Chronic Energy Deficiency (CED) pregnant women having a high perception of obstacles because they think there will be many difficulties faced such as sacrificing a lot of time and having to spend money. Family income affects the availability of nutritious food for the family. Inadequate food security in the family can lead to undernutrition. Families with low economic status will have the opportunity to fulfil their family's food and nutrition needs. The size of the family will lead to a reduced food supply and competition for food (Fitri, 2022). Changing one's behaviour is not easy, as there are perceived barriers to healthy behaviour. This is an evaluation for individuals of the obstacles in adopting new behaviours (Laila et al, 2023).

Self-efficacy of pregnant women with Chronic Energy Deficiency (CED) in high and low stunting health centres shows that most respondents have high self-efficacy so there is no difference between pregnant women with Chronic Energy Deficiency (CED) in health centres with high and low stunting cases. This study is not in line with research conducted by Ichsan et al in 2023, which states that there is a relationship between self-efficacy and stunting prevention. The high self-efficacy felt will influence mothers to meet nutritional needs during their pregnancy as a form of preventive behaviour against stunting (Noor & Muniroh, 2023). The high self-efficacy of Chronic Energy Deficiency (CED) pregnant women can be caused by high confidence in the mother's ability to provide foods that meet the nutritional elements of each meal and clean and healthy living behaviour during pregnancy. Then it can also be caused by the level of education, most Chronic Energy Deficiency (CED) pregnant women

have good knowledge about how to provide foods that meet the nutritional elements of each meal and behave clean and healthy living which will affect the health of mothers and children in the prevention of stunting. Research conducted by Fatimah et al in 2020, shows that the variables of education, occupation, and experience of receiving information have a relationship with maternal self-efficacy regarding stunting prevention (Fatimah et al, 2021).

Self-efficacy can be influenced by the experiences of others and the verbal persuasion or support of others. Verbal persuasion or information from family or health workers can influence self-efficacy. Based on the results of this study there is a stunting reduction programme carried out by the government through community health centres in collaboration with Posyandu and midwives and cadres in Semarang City. In the program, the activities carried out are the provision of additional food (PMT) to pregnant women with Chronic Energy Deficiency (CED) and also socialisation to pregnant women about nutritional fulfillment. So that pregnant women with Chronic Energy Deficiency (CED) in high and low stunting puskesmas get health information provided by local health workers. The support of others can be a motivation for mothers, especially if the support comes from health workers or people closest to them. Strong motivation makes mothers put aside obstacles and try to carry out their role optimally. Thus the stronger the mother's motivation to take action to prevent stunting, the stronger the self-efficacy will be (Utami & Rahmadhena, 2019).

Cues to action of pregnant women with Chronic Energy Deficiency (CED) at the puskesmas in high and low stunting cases show that most respondents have high cues to action so there is no difference between pregnant women with Chronic Energy Deficiency (CED) at the puskesmas in high and low stunting cases. Research conducted by Hupunau et al in 2019, states that cues to action are not related to maternal behaviour in meeting nutritional needs, but it appears that respondents with high cues to action have more good behaviour than bad behaviour (Hupunau et al, 2019). The high level of cues to action for pregnant women with Chronic Energy Deficiency (CED) can be influenced by health information about nutrition and stunting from health workers, the support of family members and the presence of information media about nutrition and stunting at health facilities Cues to action are events, experiences, physical symptoms, or environments that motivate a person to take action. Individual perceptions of cues to action are expected to encourage the adoption of health behaviours if individuals already hold other beliefs that support health actions (Utami & Rahmadhena, 2020).

Research conducted by Ibrahim et al in 2021, showed that there was a significant relationship between family support and the incidence of stunting in infants aged 24-59 months (Ibrahim et al, 2021). Support for mothers is needed, especially support obtained from the mother's family such as from the husband because the support provided can affect the mother's success in fulfilling child nutrition. In addition, the necessary family support can be provided such as the availability of time, costs, and finding information about fulfilling nutrition in order to provide good and correct treatment in preventing stunting. In addition to family support, support from local health workers is also needed in preventing stunting. Based on the results of this study, there is a stunting reduction programme carried out by the government through community health centres in collaboration with Posyandu and midwives and cadres in Semarang City. In this program, the activities carried out are the provision of additional food (PMT) to pregnant women with Chronic Energy Deficiency (CED) and also socialisation to pregnant women about nutritional fulfillment. So that pregnant women with Chronic Energy Deficiency (CED) in puskesmas with high and low stunting cases get health information provided by local health workers.

## **CONCLUSION**

Based on the results of the research conducted, there are no differences in perceived susceptibility, perceived severity, perceived benefit of action, self-efficacy, and cues to action. There are differences in perceived barriers to action of Chronic Energy Deficiency (CED) pregnant women on the fulfilment of nutrition in stunting prevention based on differences in stunting cases. It is hoped that the puskesmas will continue to work with midwives or cadres in the local area to continue government programs in stunting prevention that have been established for Chronic Energy Deficiency (CED) pregnant women in the form of providing additional food and socialisation about health to pregnant women.

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