



# **Consumption Compliance Supplementary Food Biscuits for Pregnant Women in Banda Aceh, Indonesia**

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## **Author's contribution**

*The sole author designed, analyzed, interpreted and prepared the manuscript.*

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## **ABSTRACT**

One of the intervention programs to improve the nutrition of pregnant women is supplementary feeding (PMT). The nutritional problem of pregnant women that is often found in the community is the lack of intake of macronutrients and micronutrients. The method used in this study was a sequential mixed method with a sequential explanatory design. The results of this study were the percentage of consumption of MT biscuits by 5 pregnant women with KEK who consumed  $\geq 80\%$ . The perception of pregnant women about the severity of chronic energy deficiency (CED) health problems with an arm circumference of less than 23.5 cm is not a health problem that is dangerous for pregnant women. Understanding of PMT biscuit consumption instructions from officers is still lacking. There is no social support in the implementation of PMT for pregnant women from KEK. The availability of PMT for pregnant women from KEK has not been fulfilled in accordance with applicable regulations.

*Keywords: Supplemental feeding; chronic energy deficiency; nutrition.*

## 1. INTRODUCTION

Compliance is defined as the level of behavior of a person who receives treatment, follows a diet and adopts a lifestyle in accordance with health care provider recommendations [1]. Adherence to a therapy is a positive behavior. A person will be motivated to follow therapy because of the benefits and benefits. One of the intervention programs to improve the nutrition of pregnant women is supplementary feeding (PMT) [2-9]. During pregnancy, mothers need more nutrients and increase in certain nutrients than when they are not pregnant, this is because the physiological condition of the mother changes, such as red blood cells increase, the amount of plasma increases, the uterus and breasts enlarge and the development of the fetus and placenta, so that during pregnancy a mother must increase the amount and type of food consumed to meet the growth needs of the baby and the needs of the mother who is pregnant, as well as to produce breast milk [10]. Sakan benefits from this behavior [11].

Riskesdas 2013, reported that in Indonesia, 38.5% of pregnant women had chronic energy deficiency (CHD). The results of the Nutrition Status Monitoring Survey (PSG), showed that chronic energy deficient pregnant women decreased from 2016 to 2017 from 16.2% to 14.8% respectively. Although the data shows a decrease in the prevalence of chronically undernourished pregnant women, the impact of malnutrition is so extensive that it requires efforts to overcome the nutrition of pregnant women (Ministry of Health of the Republic of Indonesia, 2018).

Banda Aceh City, South Sulawesi Province is one of the areas that has implemented a supplementary feeding program for chronically undernourished pregnant women. Although the supplementary feeding intervention has been implemented, nutrition problems among pregnant women are still found in Banda Aceh city. The results of the Nutrition Status Monitoring Survey (PSG) in 2017, reported that pregnant women with chronic energy deficiency in Banda Aceh city were 12.5% while pregnant women with chronic energy deficiency who received supplementary food biscuits were still low at only 35.3% (Ministry of Health RI, 2018).

## 2. METHODS

### 2.1 Research Type

The research method used in this study is mixed method or mixed method sequential with sequential explanatory design. Mixed method is a research method that combines or combines quantitative and qualitative methods used together in a research activity, so that more comprehensive, valid, reliable and objective data are obtained [12]. Quantitative research to obtain the coverage of consumption and compliance of supplementary food biscuits for pregnant women with CHD using descriptive methods of secondary data and qualitative research exploring the compliance of pregnant women with CHD in consuming supplementary food biscuits using a phenomenological approach. The essence of this research is to reveal and deeply understand the meaning of compliance of pregnant women in consuming supplementary food.

### 2.2 Location and Time of Research

The research was conducted in the city of Banda Aceh. This research was conducted for 2 months starting March 2022.

### 2.3 Quantitative Methods

#### 2.3.1 Population and sample

The population in this research was all pregnant women who participated in the umbrella study in Banda Aceh city as many as 328 people where 278 pregnant women who were not CHD and 50 CHD pregnant women. The sample in this research was all pregnant women who were categorized as chronic energy deficiency (CHD) pregnant women who received biscuit supplementary food and participated in the umbrella study in Banda Aceh city as many as 50 people.

#### 2.3.2 Data collection

Data collection used secondary sources obtained from umbrella research, namely data on the characteristics of pregnant women with CHD (name, age, education, occupation, address of pregnant women). Data on the number of biscuits given to pregnant women was obtained from the biscuit PMT distribution register book at

the puskesmas. Data on consumption coverage as well as the level of compliance with the consumption of supplementary food biscuits for pregnant women with CHD were obtained using a monitoring form containing the number of biscuits consumed by pregnant women per day during the intervention.

### 2.3.3 Data analysis

Univariate data analysis was used to describe the characteristics of respondents, coverage of consumption of supplementary food biscuits and compliance of respondents, this analysis is presented in the form of frequency distribution and percentage of each variable. Quantitative data processing also aims to see the relationship between consumption coverage and compliance with consumption of supplementary food biscuits for pregnant women with CHD, which is analyzed descriptively using cross tabulation.

## 2.4 Qualitative Methods

### 2.4.1 Research design

Qualitative research design with a phenomenological approach that aims to identify the nature of human experience about a particular phenomenon. The desire to understand human experience and how experiences are interpreted differently by different people will be an appropriate reason for carrying out a phenomenological research [13].

### 2.4.2 Data source

Based on the data obtained from the quantitative research method, the data source is then determined which is expected to provide information that can be used to complement the quantitative data that has been obtained in the first stage of research. Based on the results of quantitative results, a group is obtained which will be the basis for determining data sources, namely:

- a. Groups of pregnant women who received old and or new packaging biscuits with high consumption coverage and non-compliance
- b. Groups of pregnant women who received old and or new packaging biscuits with low consumption coverage and non-compliance

Selection of informants using purposive sampling method, namely selecting informants who know the problem clearly, can be trusted to be a good source of information, are willing and able to express opinions properly and correctly, and informants who live with family (husband, parents, in-laws).

### 2.4.3 Research instruments

Research instruments are devices that will be used to collect data [14]. In this study, the researcher is the main instrument equipped with research aids, such as interview recording devices (audio and audio visual), interview guidelines, and field notes.

**Data Collection** In-depth interviews were conducted using semi-structured interview guidelines with informants. It was expected to obtain as much information as possible in the form of individual dialog using free questions so that informants provide information, express opinions, views and feelings about personal experiences related to the compliance of pregnant women with CHD in consuming biscuit supplementation. In-depth interviews were conducted with women with CHD, health workers and posyandu cadres.

### 2.4.4 Data processing

Miles and Huberman (1984) in Sugiyono [12] suggest that activities in qualitative data analysis are carried out interactively and continue continuously until completion, so that the data is saturated. Activities in data analysis.

#### 2.4.4.1 Data reduction

At this stage the researcher reduces the data that is deemed unnecessary and selects data that is interesting, important, useful and new in this study.

#### 2.4.4.2 Data display (presentation of data)

After the data is reduced, the next rarity is presenting the data. The purpose of presenting data is to make it easier, understand what is happening and plan further work based on what has been understood. In this study, data presentation was used in the form of narrative text and matrix. Based on the data collected and after being analyzed, it is hoped that at this stage the research can provide an in-depth description of the compliance of additional food consumption of biscuits for pregnant women with CHD.

#### 2.4.4.3 Conclusion drawing/verification

After obtaining data from the two previous stages, at this stage, conclusions will be drawn and verified. The conclusion of this research is to support in answering the research question.

This research uses content analysis which is useful for confirming or testing pre-existing theories, when the research questions are clearly defined. Content analysis involves a process designed to condense raw data into categories or themes based on valid inferences and interpretations.

#### 2.4.5 Data validity testing technique

To ensure the accuracy of the information collected, triangulation was used, namely Source Triangulation, namely how to compare (cross check) between informant information sources, namely pregnant women, health workers, posyandu cadres and community leaders.

### 3. RESULTS

#### 3.1 Geographical

**Location** The city of Banda Aceh is astronomically located between 05°16'15" - 05°36'16" North latitude and 95°16'15" - 95°22'35" East Longitude and has an area of 61.36 km<sup>2</sup>. Banda Aceh City has boundaries that include, to the north bordering the Malacca Strait, to the south bordering Aceh Besar Regency, to the west bordering the Indian Ocean, to the east with Aceh Besar Regency.

#### 3.2 Maternal Mortality Rate (MMR)

Maternal Mortality Rate (MMR) is the number of women who die from a cause of death related to pregnancy disorders or their handling during pregnancy, childbirth and in the postpartum period (42 days after delivery) per 100,000 live births. Maternal Mortality Rate (MMR) is useful to illustrate the level of awareness of healthy living behavior, nutritional status and maternal health, environmental health conditions, the level of health services, especially for pregnant women, health services during childbirth and the postpartum period.

#### 3.3 Informant Characteristics

The quantitative data collected will be complemented with more comprehensive

opinions through in-depth interviews. Of the 50 respondents of women with CHD who received MT biscuits, 20 pregnant women were in-depth interviewed as key informants plus 12 health workers consisting of midwives, nutrition officers (TPG), 1 posyandu cadre and 6 community leaders as supporting informants.

### 3.4 Quantitative Analysis Results

#### 3.4.1 Univariate analysis

1) Distribution of Respondent Characteristics Data on gestational age or gestational age of the respondents were most in the group of first trimester pregnant women, namely 29 people (58%) and the lowest group of third trimester pregnant women, namely 4 people (8%). Data on the parity of the respondents were most in the group of pregnant women with the number of births less than 2 people, namely 31 respondents (62%) and the lowest in the group of pregnant women with the number of births more or equal to 2 people, namely 19 respondents (38%) Data on maternal employment showed the highest number of respondents as housewives (IRT), namely 38 people (76%) and the lowest as self-employed and private employees as many as 1 person (2%). Maternal education data shows the highest status of the last high school education as many as 17 people or 34% and the lowest is 1 person or 2% not in school.

**Table 1. Consumption of supplementary food biscuits**

Old Biscuit Packaging	Amount (n)	Percentage (%)
Lama	41	82.00
Baru	3	6.00
Lama + Baru	6	12.00
Total	50	100.00

Table 1 shows that the majority of respondents received old packaged biscuits, namely 41 or around 82%, only 3 (6%) respondents received new packaged biscuits and 6 respondents or around 12% who received two types of biscuits, namely old packaged biscuits and new packaged biscuits.

Table 2 shows that most respondents 21 people (51.9%) received 150 pieces of MT biscuits, 8 people (19.51%) received 30 pieces of MT biscuits, 3 people (7.31%) received 180 pieces, 3 people (7.31%) received 300 pieces and there were 6 people (2.43%) who received 750 pieces,

510 pieces, 410 pieces, 360 pieces, 200 pieces and 60 pieces respectively.

**Table 2. Number of supplementary food (MT) biscuits**

Total (Pieces)	Amount (n)	Percentage (%)
750	1	2.43
510	1	2.43
410	1	2.43
360	1	2.43
300	3	7.31
200	1	2.43
180	3	7.31
150	21	51.21
60	1	2.43
30	8	19.51
Total	41	100.00

**Table 3. Number of biscuits received and its percentage**

Amount (Pieces)	Amount Percentage	
	(n)	(%)
84	2	66.66
63	1	33.33
Total	3	100.00

Table 3. shows that the most number of biscuits received was 84 pieces, namely 2 people (66.66%) while only 1 respondent (33.33%) received 63 pieces of biscuits.

**Table 4. Distribution percentage**

Lama	Baru	Lama + Baru	(n)	(%)
300	84	384	3	50.00
210	164	374	1	16.66
150	210	360	1	16.66
30	84	114	1	16.66
Total			6	100.00

Table 4 shows that of the 6 respondents who received 384 pieces of biscuits, 3 people (50%) and the other 3 respondents received 374 pieces, 360 pieces and 114 pieces respectively.

#### 4. QUALITATIVE ANALYSIS RESULTS

Based on the results of quantitative analysis, it is known that out of 50 respondents of pregnant women with SEZ who received the MT biscuit intervention, none of the respondents were

compliant according to the intervention recommendations.

To investigate the factors that influence the adherence of pregnant women in consuming MT biscuits, in-depth interviews were conducted with informants.

#### 4.1 Understanding of Biscuit Supplementary Food Consumption Instructions

Understanding the instructions referred to in this study is the informant's understanding of the instructions given by health workers regarding the purpose and benefits of supplementary biscuit feeding, rules or recommendations for consuming supplementary biscuits and the importance of consuming them regularly according to the recommended amount and frequency.

The results of in-depth interviews found that generally the information conveyed by officers to informants was only instructions or recommendations for the consumption of supplementary food biscuits. The purpose and benefits of supplementary feeding and the importance of consuming it regularly according to the recommended amount and frequency have not been explained to informants properly and clearly. The information on supplementary food biscuits conveyed by officers to informants varies considerably. This is related to the puskesmas where the informants take the supplementary food and the officers who provide the supplementary food.

Below are informants' statements about the instructions conveyed by officers at the puskesmas:

1) Informants who received two types of biscuits, namely old packaged biscuits and new packaged biscuits.

According to several informants who received two types of biscuits during the intervention, there were differences in the consumption recommendations for the old packaged MT biscuits and the new packaged MT biscuits. The old packaged MT biscuits, informants are recommended to consume according to their ability, while the new biscuits are recommended to consume one pack of three pieces every day.

2) Informants who received the new packaged biscuits.

According to the informants, they were encouraged to consume one packet per day and return to the puskesmas to collect the MT biscuits when they ran out.

3) Informants who received the old pack of biscuits.

Interviews with informants revealed that informants received mixed instructions from health workers. The information or instructions conveyed depend on the officer providing the information. Different officers give different instructions.

The understanding of instructions on consumption recommendations given by officers can be measured by looking at how informants practice these instructions. From the results of interviews with informants, it is known that each pregnant woman or informant carries out different instructions. This is strongly related to the reception of information and the pregnant women's taste for the biscuits given. The forms of support provided by officers to informants are quite diverse. Starting from just providing information, facilitating to providing motivation. According to the results of the interviews, it is known that officer support is more focused during the implementation of the new biscuit PMT program compared to the implementation of the old packaged biscuit PMT.

#### **4.2 Family Support**

Family support expected in the implementation of the PMT biscuit intervention for pregnant women with CHD. From the results of the interviews, it was known that there were informants who received support from their families and there were also informants who ran the PMT program without receiving support from their families. Informants who get support from their families with various forms of support. Although it has not been maximally done, there are informants who have received support from their families such as instrumental support such as taking them to the health center, information support such as giving advice so that informants want and remember to consume MT biscuits, emotional support such as empathy, affection and attention.

#### **4.3 Social Support**

The expected social support in the implementation of the PMT biscuit program for

pregnant women with CHD is the support of posyandu cadres and community leaders such as the head of the kelurahan, head of RT/RW. From the results of field research, it was found that social support was only obtained by informants from posyandu cadres. Of the 20 informants interviewed, only one informant received social support from cadres. The form of support provided by cadres was to give advice and help informants collect biscuits at the puskesmas. Local community leaders were not involved in the implementation of the program to provide supplementary food biscuits for pregnant women with CHD.

#### **4.4 Availability of Supplementary Food Biscuits**

Place and amount of supplementary food biscuits received.

The place where informants take the biscuits is at the puskesmas. The amount of supplementary food biscuits received by informants varies. This is due to the limited stock of MT biscuits, informants who deliberately did not want to take MT biscuits, informants who still wanted to take MT biscuits but were not given more by the officer and informants who did not take them because it was not time for the next collection.

### **5. DISCUSSION**

#### **5.1 Perceived Severity of Chronic Energy Deficiency (CHD) Health Problems**

Illness perception is a representation of a patient's cognitive or beliefs about their illness. This perception is one of the most determining factors for patient behavior that is considered very important, such as treatment, adherence to treatment and the patient's ability to heal (Petrie and Weinman, 2007). Illness perception is also stated as a cognitive representation that can directly affect the patient's emotional response to their illness and behavioral adjustments such as adherence. in undergoing a series of health therapies that must be followed (Petrie, Weinman and Jovcich, 2007).

Perception is essentially a process of assessing a person against a particular object. In this study, the intended perception is the informant's assessment of the health problem of chronic energy deficiency and its dangers for pregnant women based on the knowledge and experiences they have experienced and felt.

The results of interviews regarding informants' understanding of chronic energy deficiency health problems are quite diverse. There are informants who already understand the health problems of chronic energy deficiency and there are still informants who do not understand the health problems of chronic energy deficiency at all. Chronic energy deficiency (CHD) is a condition in which a person experiences nutritional deficiencies (calories and protein) that last for a long time or years. A person is said to be SEVERE when the LILA (Upper Arm Circumference) is < 23.5 cm. LILA is a way to determine the risk of chronic energy deficiency (CHD) in women of childbearing age including adolescent girls.

Based on the results of the interviews conducted, it was found that generally the instructions delivered by health workers were only about the recommended consumption of MT biscuits. There are differences in instructions about the rules or consumption recommendations given to informants. This is related to the type of MT biscuits provided, the place where the MT biscuits are obtained and the officer who provides the instructions. The PMT used in Banda Aceh city to intervene with pregnant women with SEZ has two types of biscuits, namely old packaged MT biscuits and new packaged MT biscuits.

## 5.2 Instruction Comprehension

The results of interviews with informants found that some officers instructed to routinely consume one packet every day but there were also officers who instructed to consume according to the ability of the informant to consume the biscuits. This illustrates that there are still officers who do not instruct in accordance with the recommendations that should be or in accordance with the technical guidelines. The delivery of instructions that are not firm and clear makes informants carry out instructions according to their own interpretations. Increasing understanding of treatment/therapy instructions to improve patient compliance in carrying out a treatment or intervention is strongly influenced by the health workers themselves. The patient's motivation to seek treatment is high, but if he/she does not absorb instructions from health workers about the treatment program, the motivation will be wasted. But on the contrary, if the motivation is high and supported by the quality of good interactions between Health workers, the understanding of the instructions given will be very high.

## 5.3 Officer Support

Based on interviews with several informants, more information was obtained from nutrition officers (TPG) than from puskesmas midwives. Puskesmas midwives provide information but not as clear as information from nutrition officers. To make it easier for nutrition workers to provide information, nutrition workers take their time and use props such as counseling sheets and biscuit samples. To explore the pregnant women's claims, interviews were conducted with health workers [15-22]. According to the nutritionist, there was assistance provided, such as calling pregnant women and asking whether they had eaten the biscuits or not, as well as home visits, but not for all pregnant women. Assistance with home visits is only given to some pregnant women who have severe problems. This is due to the lack of funds allocated to the nutrition program as well as transportation constraints and a lot of work at the puskesmas so that it is not possible to visit all pregnant women's homes.

Various aspects of communication between patients and health workers affect adherence, for example: lack of information and supervision, lack of emotional connection with health workers [23-38]. Interactions that are too brief, too formal, too much information given and health workers who are not friendly can cause patients to become non-compliant. Health workers are expected to be physically and psychologically present when communicating with pregnant women [39-63]. It is not enough for health workers to know communication techniques and the content of communication, but what is very important is the attitude and appearance in communication.

## 5.4 Family Support

Based on the results of in-depth interviews, it is known that there are informants who have received support from their families in the form of emotional support, information support and instrumental support. However, this support is not enough to make informants become compliant in consuming MT biscuits [64-75]. This is closely related to the family's understanding and knowledge of the instructions or recommendations for consumption. However, when viewed in terms of the number of biscuits consumed, it was found that informants who received emotional support, instrumental support and information support had a higher MT biscuit consumption coverage compared to informants who did not receive family support.

This is not in line with the results of research by Rai et al. [76] that compliance with nutritional supplement consumption is strongly influenced by the availability of supplements and family support as a reminder. Husband's involvement from the beginning will be very useful to keep emotionally calm and confident.

### **5.5 Availability of Supplementary Food Biscuits**

Based on the results of interviews with informants, the place to get MT biscuits is at the puskesmas, which is provided by the puskesmas midwife and nutrition officers. The amount received varies. For the old biscuit intervention, there were informants who received five packs, some received two packs, one pack and some even received only one pack. This is closely related to the availability of MT biscuits at the health center. There was one health center that ran out of stock during the intervention process, so the biscuits were not distributed as recommended. Another problem that causes this is the lack of understanding of the puskesmas midwives of the technical guidelines for the implementation of PMT for pregnant women with SEZ, this is corroborated by the results of Riyaumul's research, 2018 in Banda Aceh city that health workers, namely puskesmas midwives, have never read the technical guidelines for the implementation of PMT biscuits for pregnant women with SEZ. They carry out PMT biscuit interventions for pregnant women only by getting information verbally and according to their respective perceptions.

## **6. CONCLUSION**

Based on the research results, it can be concluded that: The percentage of consumption of MT biscuits for pregnant women with CHD was 5 people whose consumption was  $\geq 80\%$  and 45 people whose consumption was still low, namely  $\leq 80\%$  and none of them complied with the recommendations. The perception of pregnant women about the severity of chronic energy deficiency (CED) health problems with an arm circumference of less than 23.5 cm is not a dangerous health problem for pregnant women. The understanding of PMT biscuit consumption instructions from staff is still lacking. The information provided is limited to consumption recommendation instructions, and there is no information on the importance of consuming MT biscuits according to the recommended amount and frequency. Staff support in the

implementation of PMT biscuits for pregnant women with CHD was carried out by nutrition officers and puskesmas midwives. The implementation of the old package of PMT biscuits, nutrition officers and midwives only played a role as communicators and facilitators, while in the implementation of the new package of PMT biscuits, nutrition officers have performed their roles in addition to being communicators, motivators and facilitators.

Family support in the implementation of PMT biscuits for pregnant women with SEZ is still lacking because the family's knowledge and understanding of consumption recommendations and the importance of consuming MT biscuits according to the recommended amount and frequency is not good. The support of nutrition officers and puskesmas midwives in the implementation of the old PMT biscuits only acted as communicators and facilitators and in the implementation of the new PMT biscuits, nutrition officers have performed their roles in addition to being communicators, motivators and facilitators. There is no social support in the implementation of PMT for pregnant women with CHD. The availability of PMT biscuits for pregnant women with SEZ has not been fulfilled in accordance with applicable regulations.

## **CONSENT**

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

## **ETHICAL APPROVAL**

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

## **COMPETING INTERESTS**

Author has declared that no competing interests exist.

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