



# Role of Cadre in Improving Knowledge and Attitude of Chronic Energy Deficiency on Teenagers in Mali-Mali Village, Banjar Regency, South Kalimantan, Indonesia

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## Abstract

**AIM:** The objective of this study was to analyze the role of cadres as an effort to increase knowledge and attitudes about chronic energy deficiency among adolescents in Mali-Mali village.

**METHODS:** This type of research is quasi experimental. Researchers trained five cadres who provide education to junior high school students. The sampling technique used a total sampling of 38 female students. The treatment duration was 4 months with the evaluation of knowledge, attitude, and upper arm circumference measurement each month.

**RESULTS:** This study's results were that 21.1% of respondents had good knowledge about chronic energy deficiency before treatment. The evaluation of respondents who had good knowledge about chronic energy deficiency at 1<sup>st</sup> month was 57.9%. The 2<sup>nd</sup> month was 294.7%, the 3<sup>rd</sup> month was 100%, and the 4<sup>th</sup> month was 100%. Wilcoxon test showed a significant difference in knowledge at months 1, 2, and 3 with  $p < 0.05$ . There was no significant difference at month 4 with a result of  $p > 0.05$ . The evaluation results of respondents who had a good attitude about chronic energy deficiency before treatment were 26.3%. In comparison, after treatment was 42.1% in the 1<sup>st</sup> month, 57.9% in the 2<sup>nd</sup> month, 57.9% in the 3<sup>rd</sup> month, and 78.9% in the 4<sup>th</sup> month. The Chi-square test results showed no differences in attitudes at month 1, 2, and 3, while at month 4 found a significant relationship. The upper arm circumference measurement showed that the number of respondents who suffer from chronic energy deficiency was 25 people for 4 months.

**CONCLUSION:** Cadres could improve knowledge and attitudes about chronic energy deficiency in female adolescents in Mali-Mali Village.

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## Introduction

Chronic energy deficiency is a state of continuous lack of energy and protein intake in women of childbearing age and results in health problems. Meanwhile, according to Supriasa, Chronic Energy deficiency is a condition in which women experience malnutrition (calories and protein), which lasts for a long time. Chronic energy deficiency is characterized by measuring the upper arm circumference of  $<23.5$  cm [1].

According to Basic Health Research in 2018, the proportion of non-pregnant women who suffered chronic energy deficiency in Indonesia was 14.5%. Meanwhile, the proportion of non-pregnant women experiencing chronic energy deficiency in South

Kalimantan province was 14.4% and the percentage of pregnant women with chronic energy deficiency was 18.2%. Those are indicating that South Kalimantan's chronic energy deficiency was lower than Indonesia's. The proportion of women in the 15–19 age group who were not pregnant in 2018 was 36.3%, indicating a decrease from 2013, which amounted to 46.6%. However, compared to other age groups, women in the 15–19 age group have a higher proportion rate. Hence, it can be concluded that women in this age group have a higher risk than women in other age groups [2].

The percentage of not pregnant female adolescents is the highest among women with another work status, about 36%. Basic Health Research also shows that non-pregnant women living in rural areas have a percentage of 15.3%. That was higher than non-pregnant women living in urban areas [2].

In general, the proportion of women of childbearing age at risk of chronic energy deficiency is relatively high in adolescence (15–19 years) and decreases in the older age group. If the upper arm measurement is <23.5 cm, there is a risk of giving birth to a baby's low birth weight [3], [4]. This condition considers that women of childbearing age with a risk of chronic energy deficiency tend to give birth to babies with low birth weight. It inhibits growth within 5 years old and younger [5], [6].

The factors causing chronic energy deficiency in women of childbearing age and pregnant women are very complex, including an imbalance of nutritional intake, infection, or bleeding. The main group of women of childbearing age who are still included in the adolescent category is a group that is prone to experiencing chronic energy deficiency. Most teenagers have not met their daily nutritional needs, even though the energy they spend every day is quite a lot. Nutritional problems in adolescents will decrease the body's physical activity with good productivity, decreased physical fitness, and decreased hemoglobin levels [6], [7].

Data on people who experience chronic energy deficiency in Mali-Mali Village found that 20 people (52.6%) had an upper arm circumference <23.5 cm. Among these girls, only 4.6% have good knowledge, while the rest have sufficient and less knowledge [8].

One of the factors that influence health behavior in Mali-Mali Village is knowledge. Lack of knowledge will lead to bad behavior. Increased knowledge can be provided through health education. Health education is provided with health promotion media's support to increase adolescent understanding [9], [10]. One technique that can be used to conduct health education in adolescents is by conducting counselor interventions [11]. Research by Syahadatina *et al.* proves that counselors can improve adolescent knowledge, attitudes, and the environment to change behavior [12]. Commonly, the counselor's research was conducted to change early marriage behavior. However, counselors/cadres' research to reduce the risk of chronic energy deficiency in adolescents was still not widely done.

The purpose of this study was to analyze the role of cadres as an effort to increase knowledge and attitudes about chronic energy deficiency among adolescents in Mali-Mali village.

## Methods

This research method was quasi-experimental, with youth cadres' intervention to provide health education with leaflet media. This research involved 38 young women as samples selected by total sampling.

They were female students in Junior High School (SLTP)/equivalent in Mali-Mali Village who were willing to become respondents. This research was conducted in Mali-Mali Village, Karang Intan District, Banjar Regency, South Kalimantan, Indonesia.

The procedure carried out was to recruit five cadres chosen by the Head of Mali-Mali Village. Selected cadres were then given the training to provide information about chronic energy deficiency and skills of measuring upper arm circumference. Lecturers conducted the training at the Faculty of Medicine, University of Lambung Mangkurat. The health education program by cadres lasted for 4 months with leaflet media. Evaluation of knowledge, attitude, and upper arm circumference were evaluated 4 times.

The knowledge data analysis used was the paired T difference test with a confidence level of 95%, if the data were normally distributed. If the data is not normally distributed, the Wilcoxon test would be carried out with a 95% confidence level. Attitude data were analyzed using the Chi-Square test with a confidence level of 95%. Upper arm circumference data were analyzed descriptively.

Knowledge and attitudes were identified from the questionnaire. The number of questions for the knowledge and attitude questionnaire was 10 questions each. The questionnaire has been tested for validation and reliability. The upper arm circumference was measured with a measuring tape. This research was conducted in January-April 2018, in Mali-Mali Village. Data were collected by six enumerators who had been trained and equality of perceptions.

## Results

The training was conducted by lecturers of the Faculty of Medicine, University of Lambung Mangkurat, to 5 female students at MTs Al-Khair, Mali-mali Village. The material given was about chronic energy deficiency and skills of measuring the upper arm circumference. The evaluation carried out was the knowledge and attitudes of young women about chronic energy deficiency.

Table 1 showed that female adolescents' knowledge had increased after providing health education for 4 months, with a frequency of 4x. Every month evaluation showed that young women with good knowledge always increase in the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> months. In the past 2 months, all young women were categorized in good knowledge. Then, the results of attitude data are shown in Table 2.

Table 2 shows that changes in attitude were getting better related to chronic energy deficiency. The attitudes evaluated in 4 months had never decreased,

**Table 1: Knowledge of female adolescents before and after being given health education**

Knowledge category	Pre-test (%)	Post-test 1 (%)	Post-test 2 (%)	Post-test 3 (%)	Post-test 4 (%)
Good (75–100 points)	21.1	57.9	94.7	100	100
Enough (50–<75)	73.7	39.5	5.3	0	0
Less (<50)	5.3	2.6	0	0	0
Total	100	100	100	100	100

**Table 2: Adolescent attitudes before and after being given health education**

Attitude category	Pre-test (%)	Post-test 1 (%)	Post-test 2 (%)	Post-test 3 (%)	Post-test 4 (%)
Good	26.3	42.1	57.9	57.9	78.9
Bad	73.7	57.9	42.1	42.1	21.1
Total	100	100	100	100	100

although not all respondents had good attitudes regarding chronic energy deficiency.

All data in Table 1 were not normally distributed, so the difference test was continued with the Wilcoxon test with a confidence level of 95%. The results of the statistical analysis of knowledge and attitudes are shown in Tables 3 and 4.

**Table 3: Results of the Wilcoxon test statistics for knowledge data**

Variable	Pre-test	Pre-test	Pre-test	Pre-test	α - value
	Post-test 1	Post-test 2	Post-test 3	Post-test 4	
Knowledge	0.000	0.000	0.000	0.394	0.05

Table 3 shows differences in respondents' knowledge before and after providing health education by cadres in the 1<sup>st</sup> to the 3<sup>rd</sup> month. However, there was no significant difference between respondents' knowledge about chronic energy deficiency before and after counseling at month 4. It was due to the respondents' knowledge in the 3<sup>rd</sup> and 4<sup>th</sup> months was 100% classified as good.

**Table 4: Chi-square test results for attitude data**

Variable	Attitude		Total	Df	α-value	X2 Table	X2 Count
	Good	Bad					
<b>Test 1</b>							
Post test	16	22	38	1	0.05	3.841	2.464
Pre-test	10	28	38				
Total	26	50	76				
<b>Test 2</b>							
Post-test	22	16	38	1	0.05	3.841	1.896
Pre-test	16	22	38				
Total	38	38	76				
<b>Test 3</b>							
Post test	22	16	38	1	0.05	3.841	1.896
Pre-test	16	22	38				
Total	38	38	76				
<b>Test 4</b>							
Post-test	30	8	38	1	0.05	3.841	3.896
Pre-test	22	16	38				
Total	52	24	76				

Table 4 shows no significant differences in attitudes before and after health education by cadres at months 1–3. However, there was a significant difference in month 4. Another variable assessed based on the cadre's skills was the circumference of the upper arm. The data on the upper arm circumference measured every month are presented in Table 5. Table 5 shows the same upper arm circumference data for the 4 months of evaluation. Thus, the data were not subjected to statistical analysis.

**Table 5: Data on upper arm circumference of the female adolescent in Mali-Mali Village**

Chronic energy deficiency category	1 <sup>st</sup> Month	2 <sup>nd</sup> Month	3 <sup>rd</sup> Month	4 <sup>th</sup> Month
Chronic energy deficiency	25	25	25	25
Normal	13	13	13	13
Total	38	38	38	38

## Discussion

Statistical results for analyzing the role of health education by cadres on respondents' knowledge of chronic energy deficiency were subjected to different tests. The results of the analysis (Table 3) showed that health education by cadres had a significant role in increasing respondents' knowledge about chronic energy deficiency ( $p < 0.05$ ). It was supported by descriptive data in Table 1, which shows an increase in respondents with good knowledge of chronic energy deficiency in each evaluation period. There are differences in knowledge and attitudes before and after the intervention but have not had an impact on the circumference of the upper arm because the circumference of the upper arm is a long-term nutritional indicator that will change in a long time. In addition, the factors that affect the circumference of the upper arm can come from other factors, namely, diet, family economic status, and other environmental factors that affect the nutritional intake of these adolescents which were not identified in this study.

Health education plays a role in the implementation of health services, disease prevention, and health promotion. Health education aims to improve disease prevention by increasing health knowledge and behavior [13], [14], [15]. The effectiveness of cadres can be evaluated through increasing respondents' knowledge after receiving health education from trained cadres [16]. It is in line with the research results presented in Table 1.

Knowledge is various matters obtained through the five senses [17]. Knowledge has different intensities. There are six levels of knowledge: (1) Knowledge, the respondent can only recall the information obtained; (2) comprehension, the respondent understands an object, not only mentions it but also interprets it correctly; (3) application, people who have understood information can apply it in life; (4) analysis, the ability to describe and separate, then look for relationships between the components contained in an object; (5) synthesis, the ability to summarize a logical relationship from the components of the knowledge possessed; and (6) evaluation, the ability in judging based on applicable criteria or norms [17].

One of the factors that influence a person's knowledge is the environment. The environment is

everything around the individual. The environment affects the process of entering knowledge into the individuals in that environment. It happens due to the reciprocal interaction that will be responded to as knowledge [17]. One of the environmental factors is cadres who interact with specific community groups to provide health knowledge interactions.

The village head selects cadres based on their activeness and social skills with adolescents, then conducts training by providing information about Chronic Energy Deficiency and how to measure upper arm circumference. Cadres can play a role in improving nutritional status by providing counseling. The trained cadres would have better knowledge. Hence, they can provide information to respondents. The expected output is a change in behavior related to an increase in nutritional status [18].

Health education can be facilitated by using the media. The media used in this study were leaflets. The leaflet is a short publication in the form of a leaflet containing information or information. The advantages of leaflets are that they are attractive, easy to understand, and concise [19]. The right knowledge will affect a person's attitude. Attitude is an emotional predisposition to respond to an object [20]. Attitudes are certain regularities in terms of feelings (affection), thoughts (cognitive), and actions predisposition towards an aspect of the surrounding environment [17]. In this study, the respondents' knowledge increased to have good knowledge about chronic energy deficiency in months 3 and 4. This knowledge made respondents' attitudes toward chronic energy deficiency also improved in months 4 (Tables 1 and 2). It is because the process of someone becoming aware and responding takes time.

In this study, the stages of knowledge that the respondent had after health education were at levels 1–2 because it had improved attitudes but had not changed the nutritional status of the respondent. The measured nutritional status of respondents is the circumference of the upper arm. The number of respondents who experience chronic energy deficiency is still the same every month. There has not been a decrease. Since the upper arm's circumference is an indicator of nutrition, that will change in the long term. The health impact of this research is that cadres' assistance in providing information about chronic energy deficiency can increase adolescent knowledge and attitudes about chronic energy deficiency so that it is expected to have an impact on adolescent behavior changes such as diet to reduce the incidence of chronic energy deficiency. The strength of this study is that it uses community empowerment in helping the government to overcome nutritional problems for girls. The limitation of this study is that the evaluation only lasts for 3 months, while upper arm circumference is a nutritional parameter that will change in a long time.

## Conclusion

The role of cadres could increase knowledge and attitudes about chronic energy deficiency in adolescents in Mali-Mali village. Based on this study's results, it can be suggested to conduct regular training for health cadres to provide information about chronic energy deficiency and measure the upper arm circumference to detect adolescent women's nutritional status early. Health information should be continuously given because changes in knowledge, attitudes are related to chronic energy deficiency would take time. Hence, it will reduce the incidence of chronic energy deficiency in young girls.

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