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Analysis of the Variables Affecting Chronic Energy Deficiency (CED) in Adolescent Girls: a Systematic Review

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ABSTRACT: Chronic Energy Deficiency (CED) can have a negative impact on health. Individuals who experience CED will have underweight or have low body weight, and their daily productivity will be disrupted due to malnutrition. Chronic Energy Deficiency occurs in Women of Reproductive Age (WRA) so it will have an impact in the future when they will experience the process of pregnancy, and childbirth and the baby's weight will also be affected. Chronic Energy Deficiency includes being underweight, undernourished, undernutrition, and stunting. Therefore the authors want to analyze the causes that can influence the incidence of chronic energy deficiency in late adolescent girls. The author performs an article search method through electronic databases originating from Google Scholar, PubMed, Science Direct, and the Garuda portal. Journal references used amounted to 18 articles. The results of the search found that food intake behavior of macro and micro substances, nutritional knowledge, nutritional attitudes, beliefs about ideal body image, sociodemographics, socioeconomic factors, family members, knowledge, attitude, and many other causes can influence the occurrence of Chronic Energy Deficiency.

KEYWORDS: Chronic Energy Deficiency, Mid-upper arm circumference, Underweight, Undernourished, Undernutrition, adolescent girl.

INTRODUCTION

Food and Agriculture Organization (FAO) said, in 2021 there will be around 767 million people suffering from malnutrition worldwide. Indonesia is registered as the country with the highest prevalence of malnourished people in the Southeast Asia region, amounting to 17.7 million people (FAO et al., 2022). Chronic energy deficiency (CED) is a type of malnutrition, where there is insufficient nutrition needed by the body due to nutritional intake between energy and protein which is not comparable to the situation of the body which is characterized by fatigue due to physical limitations and body weight and little energy reserves due to insufficient food consumption over a long period of time (Wubie et al., 2020).

Chronic Energy Deficiency can have a negative impact on health. Individuals who experience CED will have underweight or have low body weight, and their daily productivity will be disrupted due to malnutrition (Mukkadas et al., 2021). Malnutrition of all kinds, such as being underweight, too shorty, too thin and lack of vitamins and minerals, is a worldwide problem (Hadush et al., 2021). WHO recommends assessing the nutritional status of adolescents as thin (low body mass index for age) and stunting (low height for age), where wasting is mainly acute (short-term) consequences and stunting can indicate chronic (long-term) nutritional deficiencies (Hadush et al., 2021).

Furthermore, malnutrition can lead to poor health and development outcomes, including poor educational attainment due to reduced productivity, and increased risk of communicable diseases. Chronic Energy Deficiency occurs in Women of Reproductive Age (WRA) so it will have an impact in the future (Mukkadas et al., 2021). Previous studies have define those adolescent girls who experience malnutrition through their infancy and in the forthcoming will become malnourished mothers, give birth to babies with low birth weights, stillbirths, small babies for gestational age, complicated deliveries, and even the worst can cause maternal death. These are all associated with malnutrition during the adolescent period (Jikamo & Samuel, 2019; Raru et al., 2022).

World Health Organization (WHO) said, women of Reproductive Age are 15-49 years. Women aged 20-35 years are the most appropriate target age for preventing nutritional problems, especially CED (Supariasa, 2012). Nutritional deficiency is a global public health problem, with the prevalence of underweight, stunting, and wasting being 13.7%, 29.1%, and 6.3% (Negash et al., 2022). Based on Indonesia's 2018 Riskesdas (Basic Health Research) data, the prevalence of CED in WRA aged 15-49 years is

14.5%. The prevalence of CED at the age of 15-19 years is 36.3%. The prevalence of CED at the age of 20-24 years is 23.3% (Kementrian Kesehatan RI, 2018).

Nutritional needs increase during adolescence when these nutrients are used to meet the growing demands of puberty. Adolescence is an age when growth and development proceed rapidly after infancy. Adolescents gain up to 50% of their adult body Fifty percent of adult body weight comes from adolescence, and twenty percent of adult height, and fifty percent of bone mass during adolescence. A variety of factors can influence adolescent eating habits and behavior, such as understanding and brain development can influence health and the wider family, sociocultural, and economic environment in which adolescents live, eat, learn, and play. Malnutrition occurs when people do not consume the nutrients to be processed to meet their daily energy needs and to maintain the immune system (Tafasa et al., 2022). In addition, both mental and physical health in young women is an investment for the future because healthy female students will become healthy workers in the future (Ribeiro et al., 2018).

Adolescent girls are classified into early and late young women. Early adolescent girls aged 10-13 years, middle adolescents aged 14-17 years, and ending at ages of 18-22 years (Lukman et al., 2022). In the final group of young women aged 18-22 years, body image is an aspect that is of sufficient concern (Widhiyanti et al., 2020a). At present, social media is increasingly in demand, especially tik tok, Instagram, Facebook, Twitter, and other social media which are very much loved by adolescent girls, including late adolescent girls (Clark et al., 2021). Social media presents images of slender and fairly thin models as ideal body shape figures, this can cause late young women to feel often dissatisfied and even insecure about their own body condition (Vall-Roqué et al., 2021).

Malnutrition including CED, underweight, undernutrition, undernourished, and thinness directly affected by inadequate food intake and disease and indirectly linked to many factors, including poor water, sanitation and hygiene (WASH) (Chattopadhyay et al., 2019). CED among adolescents is often associated with poverty, poor maternal health so that child nutrition becomes poor also due to improper feeding and child care when infants and children are early in life. A study in various parts of the world says sociodemographic factors, environment, type of diet, and pubertal characteristics are the main factors associated with adolescent malnutrition (Tafasa et al., 2022).

Large family members, country residence, unprotected sources of drinking water, lack of latrines, low-scoring diet diversity, illiterate mothers, and food insecure households are identified as factors causing undernourished adolescents in the literature (Negash et al., 2022). Adolescent nutrition is very important to help improve the nutritional status of adolescents, which will have an impact on future economic development, as well as break the chain of malnutrition (Tafasa et al., 2022).

Stojcic (2020) said that the theory generally used to explain the development of body image is the tripartite influence model, namely parents, peers, and social media. Teenagers tend to compare themselves with their peers on social media. Comparisons made by adolescents can be in the form of comparing physical forms with their peers or with public figures seen on social media (Frederick et al., 2022).

Therefore, researchers are interested in knowing the causes of chronic energy deficiency and all types of malnutrition such as underweight, undernutrition, and unnourished in adolescent girls.

METHOD

Article search uses four databases, namely PubMed, Google Scholar, Garuda Portal, and ScienceDirect. The search keywords for the article were "chronic energy deficiency", "malnutrition in adolescent girls", "chronic lack of energy in adolescent girls", "causes of chronic energy deficiency", "underweight in adolescent girls", "undernourished in adolescent girls", and "mid upper arm circumference". The inclusion criteria for this study were articles published in 2017–2022, full text, and on adolescent girls. The exclusion criteria were pregnant women, paid articles, textbooks, and articles using languages other than English and Indonesian.

A literature search through four databases resulted in 5.727 articles that match the keywords used by the researchers. There are 97 similar articles (duplication) and 4.779 articles that are irrelevant and do not use Indonesian or English, so the entire contents of the article are obtained for selection. From the selection results, 851 articles were found that matched the research objectives, inclusion critera and exclusion criteria. After going through various stages in the systematic review, 18 articles were found to be discussed in this study.
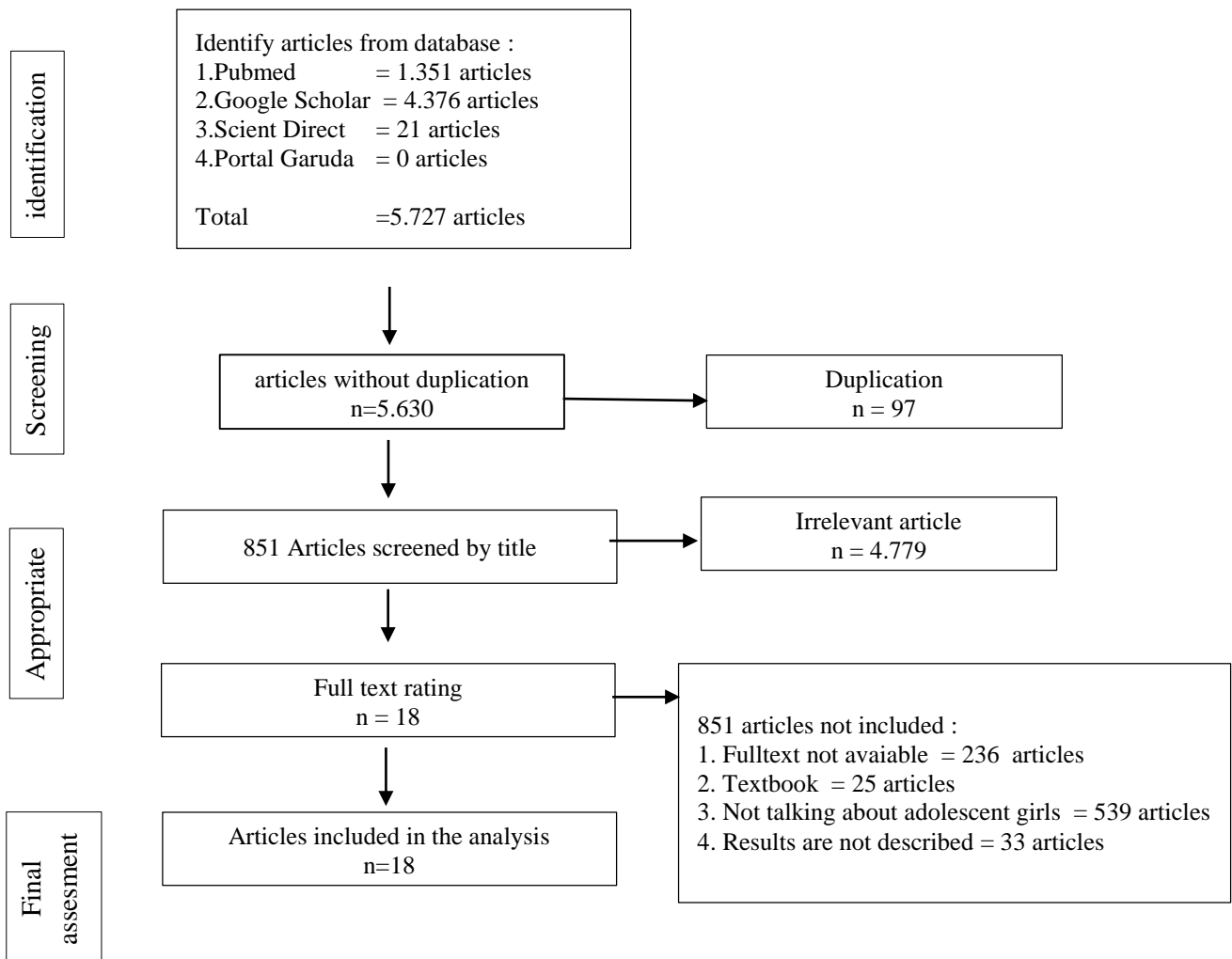
Fig 1. Research flowchart

RESULTS

From the search selection results from the articles described in the method above. There were 18 articles obtained regarding various variables that can affect chronic energy deficiency or underweight in late adolescent girls, which can be seen in the table below.

Table 1. List of Systematic Review Articles

No	Author	Theme	Study Type	Target respondents	Variables	Study Results
1.	(Purba et al., 2022)	Nutritional Intake and family income with Chronic Energy Deficiency of Events in Adolescent Girls Student at SMA N 1 Belang	Cross-sectional	69 adolescent girls aged 15-18 years in Manado, Indonesia	Dependent: CED Independent: Energy Intake, Protein Intake, and Family Income	CED can be affected by energy intake ($p = 0.009$), family income ($p = 0.024$), but protein intake can' chronic energy deficiency ($p=0.523$)

2.	(Syati, 2017a)	Nutritional status with peer influence and Body Image of Premarital WRA	Cross-sectional	115 adolescent girls aged 16-18 years, in Terbanggi Besar district Central Lampung Regency	Dependent: Nutritional Status Independent: Body Image and Peer Influence	Nutritional status can be affected by body image (p = 0.001). Nutritional status can't be affected by peer influence (p = 0.517).
3.	(Nair et al., 2017)	Nutritional status of adolescent girls	Cross-sectional	583 adolescent girls, 10-19 years at the district of Maharashtra, India	Dependent: underweight, stunting, and thinness Independent: Age group, religion, type of family, educational status, marital status, and socioeconomic class	Underweight → 36.53%, Stunting → 48.37%, and thinness → 18.87%. There was a statistically significant relationship between being underweight and marital status (p=0.029). There was a statistically significant relationship between religion, age group, and educational status with stunting was significant (p<0.05). There was a significant relationship between the type of family, socioeconomic status, and religion (0.05).
4.	(Ramya et al., 2017)	Nutritional Status and their Consciousness about Body Image of adolescent girls	Cross-sectional	490 respondents aged 15-19 years in Chitradurga	Dependent: underweight, normal, overweight, and obese Independence: type diet, body image, the discrepancy in weight, satisfaction	Underweight → 53.06% Nutritional status and type of diet have a correlation. Nutritional status have a correlation with consciousness about body image.
5.	(Ahmad et al., 2018)	Double burden of malnutrition among adolescent girls	Cross-sectional	2400 adolescents girl in Barabanki district of Uttar Pradesh.	Dependent: Normal, underweight, overweight, and obese Independent: Age category, Religion, Type of family, Socioeconomic class, Residence, Type of school, Father and mother education, Father and mother occupation, Mode of travel to school,	Underweight → 47.0% Overweight → 5.9% Obese → 2.7%

No.	Author	Title	Design	Sample	Variable	Result
					Outdoor physical activity, Frequent carbonate soft drink intake, Frequent intake locally available sold out street food items	
6.	(Chattopadhyay et al., 2019)	WASH practices with nutritional status	Cross-sectional	6352 adolescent girls, 10-19 years in Bihar, Odisha, and Chhatisgarh	Dependent: Stunting, BMI, and MUAC Independent: WASH Practice	Stunting and BMI have a relationship with water facilities outside seen to be stunted ($p<0.01$) and thin ($p<0.01$). Low MUAC (<19cm) ($p<0.01$) and stunting ($p<0.05$) also have a relationship with open defecation. Not using soap after defecation have low MUAC ($p<0.01$). Not attending health services also have a low MUAC ($p<0.10$).
7.	(Shapu et al., 2020)	Knowledge, attitude, and practice with malnutrition.	Cross-sectional	612 adolescent girls aged 10 to 19 years, in Maiduguri, Borno State, Nigeria	Dependent: Knowledge, Attitude, and Practice Independent: Name of school, Religion, Education of father, Motivation, Behavioral skill, and information	278 girls the wrong way to reduce nutritional intake. Predictors of attitude are Religion → $p=0.023$ Information → $p<0.001$ Motivation → $p<0.001$ Predictors of practice are Education of the father ($p=0.001$), behavioral skill ($p=0.019$), and information ($p=0.026$),
8.	(Telisa & Eliza, 2020)	CED with Intake of macro nutrition, iron intake, and hemoglobin levels in female adolescents	Case-control	72 adolescent girls aged 15 – 17 years, in Palembang	Dependent: CED Independent: Aged, Intake Energy, Protein, Fat, Carbohydrate, Iron, Hb	Association CED with energy consumption ($p=0,004$), fat ($p=0,031$), protein ($p=0,004$) and iron intake ($p=0,000$). Macro and micronutrients can be affected by permeation.
9.	(Wardhani et al., 2020b)	Body Image and Diet with CED	Cross-sectional	189 adolescent girls in Bogor, West Java	Dependent: CED Independent: *Appearance Orientation, Appearance Evaluation, Overweight Preoccupation, Body Area Satisfaction,* dan *Self-Classified Weight*	Body Image and diet have an association with CED.

10.	(Febry et al., 2020)	The Determinant of CED in Adolescent Girls in Ogan Komering, Ilir Regency	Cross-sectional	144 adolescent girls in Ogan Komering, Ilir Regency	Dependent: CED Independent: Teenage Knowledge, Eating Habits, Family Size, Pocket money, Family Income, Mothers Employment Status, Mothers education status	There was no association between determinant factors with CED.
11.	(Widhiyanti et al., 2020)	Fad Diet, and another factor can affecting CED	Cross-sectional	200 adolescent girls aged 18 – 22 years in Yogyakarta	Dependent: CED Independent: Body Image, Energy and Protein consumption, Fad Diet, Stress, Nutritional Knowledge, BMI	There was a relationship between CED and body image perception (p< 0.001). CED will be decreased if girls consume high energy intake (p= 0.005), high protein intake (p= 0.020), high nutritional knowledge (p= 0.038), and high BMI (p= 0.005).
12.	(Kusuma wardani et al., 2020)	CED with media influence of Female Collage	Cross-sectional	190 adolescent girl in FKIP UNILA, Bandar Lampung	Dependent: CED Independent: Sosial Media	38.95% of female college were CED. Social media has a significant relationship with CED (63,7%, p=0.006)
13.	(Alemu et al., 2021)	Undernutrition of adolescent girls attending the school of Debark, Ethiopia	Cross-sectional	757 adolescent girls, at school in Debark district, Northwest Ethiopia	Dependent: Thinness and Stunting Independent: sociodemographic, dietary related factors, nutrition information factors, household environment	Thinness among rural → 8.5% and urban dwellers → 12.1% Have no latrine, lower wealth class, lowest and middle wealth class are factors can be affected thinness.
14.	Saha et al., 2021)	Nutritional Status, Knowledge, and Uptake of Nutritional Services Among Adolescent Girls in Western India	Cross-sectional	1252 adolescent girls, aged 10-19 years of Dev Bhumi Dwarka district	Dependent: underweight, normal, overweight, and obese Independence: Age, education, schooling status, caste, religion, blocks, knowledge, uptake of nutrition and health services, hygiene and sanitation	Underweight → 19,6% Overweight → 8.9% Obese → 2.6% Age (p = 0.00), knowledge (p = 0.05), the number of family members (p = 0.016), and use of the toilet (0.041) can causes low-BMI.

15.	(Hadush et al., 2021)	Nutritional status and associated factors among adolescent girls in Afar.	Cross-sectional	736 adolescent girls, aged 10-19 years old in Afar. Northeastern Ethiopia	Dependent: thinness and stunting Independent: Age of adolescent, grade level, grade level, menarche, marital status, dietary diversity.	Thinness → 15.8% (95% CI 13.3–18.5%) Stunting → 26.6% (95% CI 23.5–29.9%). Early adolescent age can causes thinness (AOR = 2.89) And stunting can be affected by early adolescent age (AOR = 1.96), household food insecure (AOR = 2.88), menstruation status (AOR = 2.42), and availability of home latrine (AOR = 3.26).
16.	(Raru et al., 2022)	Late adolescent girk with Under-Nutrition in East Africa	Secondary data analysis	21.779 adolescent girls aged 15–19 years in African	Dependent: undernourished Independent: age, marital status, residence, educational status, number of household members, number of under-five children, sex of household head, age of household head, wealth index, covered by health insurance, source of drinking water, time to get to a water source, type of latrine, media exposure, and living country.	Undernutrition → 16.50% Obesity → 2.41% Undernutrition have a relationship with rich wealth index family, having secondary education, and being from a medium wealth index family. There was no relationship between undernutrition with having more than seven household members (AOR = 1.36), walking more than 30 min to a water source (AOR = 1.10), and living in Ethiopia (AOR = 1.75).
17.	(Tafasa et al., 2022)	Undernutrition with adolescent girls in Abuna Gindeberet district	Cross-sectional	587 adolescent girls, aged 10-19 years in the Abuna Gindeberet district	Dependent: stunting and thinness Independent: water source, information on adolescent nutrition, patterns of diversified meals, moderate intensity sport, history of illness, begin menstruation, number meals per day, grade level	Stunting → 15.4% Thinness → 14.2% Stunting can be affected by the Number of meals per day (AOR=3.62), adolescent girls of lower grades (AOR=2.08) and who did not begin menstruation (AOR=1.71). Thinness can be affected by adolescent girls engaged in vigorous-intensity activities (AOR=2.51), poor dietary diversity score (AOR=4.05) and adolescent age (AOR=3.77).

| 18. | (Negash et al., 2022) | Undernutrition with adolescent girls and young women in Ethiopia | Cross-sectional | 5362 adolescent girls and young women aged 15-24 years in Ethiopia | Dependent: undernutrition Independent: Age in years, media exposure, mothers education, family size, source of drinking water, wealth index, religion, community level poverty, community level media exposure, community literacy, residence | The prevalence of undernourished is 25.6% (95%CI: 24.5–26.9). There was a significant relationship between undernourished adolescent girls and young women aged 15–19 years (AOR: 1.53), individual media exposure (AOR: 0.82), and unprotected drinking water source (AOR: 1.24). |

DISCUSSION

Adolescence is the age of transition from childhood to adulthood (Nair et al., 2017). According to Santrock (2007) adolescence begins around 10-13 years and ends at 18-22 years (Vransisca, 2022). When a adolescence will experience a lot of changes. For example, in physical and body changes to increase muscle mass, and increase in fat tissue in the body, as well as hormonal changes also occur. These changes impact the nutritional needs of their food.The Imbalance between intake needs and adequacy will cause nutritional problems, both in the form of problems of excess nutrition and malnutrition (Purba et al., 2022). This period requires nutritional needs that contain lots of macronutrients and micronutrients to supply rapid growth spurts and increased physical activity (Ahmad et al., 2018).

The prevalence of undernutrition is still high. Chronic energy deficiency (CED) is defined as a chronic condition in which a person is in an energy imbalance, even though they live not from a poor family (Dagne et al., 2021). CED occurs due to lower energy consumption compared to the amount of energy needed by the body, which lasts for years. CED can be known from the value of the mid-upper arm circumference (MUAC) ≤ 23,5 cm(Astuti et al., 2022; Purba et al., 2022; Wardhani et al., 2020) and BMI < 18,5kg/m^2 (WHO, 2013).

The way to measure MUAC is to measure the circumference of the middle arm between the tip of the elbow and the tip of the shoulder, this method is a simple way of assessing nutritional status in the adolescent population. In contrast to BMI measurements which can be influenced by factors that affect overall body mass, such as trunk edema due to protein energy malnutrition. MUAC is not affected by this factor (TFNC, 2016). MUAC is more usable for measuring adolescents and children, from the age of five years and over concurrent with the WHO references (Destaw et al., 2021). BMI also requires adequate equipment, namely a stadiometer and functional scales. Meanwhile, MUAC uses only simple equipment (standard tape in millimeters specially made for MUAC measurement) and can be used by clinicians and non-clinics in both clinical and non-clinical settings, more efficiently and economically. (Lillie et al., 2019).

Mid-upper arm circumference is an illustration of the availability of nutrients in the subcutaneous fat and muscles. Energy reserves can be stored in the form of adipose tissue, which is fat under the skin (Telisa & Eliza, 2020). The level of energy and protein adequacy affects muscle mass but the decrease in muscle mass is caused by the level of energy and protein adequacy. This is in accordance with the theory that nutritional intake can affect a person's nutritional status. If protein intake is sufficient, the nutritional status will be appropriate, including the MUAC size.

Protein is a macro-nutrient that functions as a bodybuilder and also as a source of energy in the body (Telisa & Eliza, 2020). It is known that protein can function as a reserve of the last energy after fat and carbohydrates are used. It can be interpreted that protein is used as compensation for energy deficits to reduce the incidence of CED (Widhiyanti et al., 2020). Carbohydrates are a source of energy for the body, these substances are found in foodstuffs derived from plants such as rice, corn, cassava, sago, wheat,

taro and others. Carbohydrates function as a provider of energy or calories to meet the needs of the body's activities and also to maintain body temperature (Telisa & Eliza, 2020).

Generally, adolescent girls reported frequent intake of locally available indigenous street food (Ahmad et al., 2018) and do not pay attention to the amount of energy intake needed in a day to carry out activities (Widhiyanti et al., 2020). The increased consumption of processed foods that lack nutritional value, but have a lot of calories, such as consuming junk food, is the cause adolescents being very vulnerable to certain nutritional deficiencies even though their nutritional status is normal (Telisa & Eliza, 2020). Changes in nutrition in adolescents if not made improvements that are well sought after, will affect the quality of society in the future (Dagne et al., 2021). When food intake in adolescents is good, it will produce good energy and can be used for growth and development in adolescence. The worse the food intake of an adolescent, the higher the risk of CED occurring in that person (Purba et al., 2022).

Based on the selected articles, it is known that several variables can affect CED in adolescent girls. It was found from several articles that food intake behavior of macro and micro substances, both energy intake, carbohydrate intake, protein, fat, and iron intake (Telisa & Eliza, 2020; Widhiyanti et al., 2020b), although there are also articles that say that protein intake has no effect on CED (Purba et al., 2022). One of the behaviors of food intake is the type of diet (Ramya et al., 2017; Wardhani et al., 2020b) and the number of meals per day (Tafasa et al., 2022). Usually, adolescent girls go on a diet because they want to maintain their body shape, in order to create an ideal body image. It is explained in the article that body image is like *Appearance Orientation, Appearance Evaluation, Overweight Preoccupation, Body Area Satisfaction, and Self-Classified Weight* has a major impact on CED (Wardhani et al., 2020). Therefore, body image can indirectly affect chronic energy deficiency (Ramya et al., 2017; Syati, 2017b; Wardhani et al., 2020b; Widhiyanti et al., 2020b), or malnutrition such as underweight and thinness. When adolescent girls are on a strict diet and do not manage their diet properly, malnutrition will happen.

School is a factor that can influence knowledge to reduce malnutrition. Religion, information, and motivation can influence attitudes toward reducing malnutrition. Schools, fathers' education, information, and behavioral skills can reduce malnutrition. In this study it was stated that young women had poor knowledge about malnutrition, regarding definitions, types, causes, effects, and prevention, both micronutrient deficiencies such as iron, vitamin A, calcium, and iodine, or macronutrients such as energy, carbohydrates, fat. and proteins. Lack of knowledge about malnutrition can be caused by a lack of education in young women regarding knowledge and nutrition health education (Shapu et al., 2020).

In contrast to the research by Saha et al (2021), which stated that educational status did not have a relationship with being underweight among adolescent girls. In this study, only age, the number of family members, knowledge, and use of the toilet were statistically associated with the BMI category among young women. Although there are several other factors that do not cause statistically, their impact on nutritional status cannot be avoided. So it is true that nutrition in adolescents, especially young women, must be prioritized by improving adequate living standards and good health education.

Socioeconomic can affect nutritional status, if he comes from the upper class, of course the teenager will not be malnourished, but if the teenager comes from the lower class or the economy is down, it is likely that the teenager will experience malnutrition. This can be seen from the research Ahmad et al (2018). In line with research Alemu et al (2021) and Hadush et al (2021) rural areas that have no latrine, lower wealth class can affect nutritional status. It is said in the article that it can cause thinness and stunting.

Nutritional status can also be caused by WASH. It was explained in one of the selected articles, that water facilities outside the household have a significant relationship with stunting and low BMI. Adolescent girls who get water from outside the home are more likely to be short and thin. Significant results are also seen in open defecation which can cause stunting and low MUAC. Adolescent girls who do not use soap after defecating tend to have a lower MUAC. Not attending health services organized by the health department is also a factor that causes malnutrition (Chattopadhyay et al., 2019).

It was explained that thinness can be influenced by teenage age, grade level, eating snacks, marital status, menarche, and dietary diversity. It is better to do a better way by improving the standard of living of the family better by looking for activities that can generate money, nutrition education, and personal and environmental hygiene practices. Interventions should also be carried out to improve the nutritional status of young women through regular nutrition counseling at health facilities, community strata, and schools (Hadush et al., 2021).

For young girls, unprotected sources of drinking water, employment status, media exposure, region and place of residence are factors that can influence malnutrition. Those who were more frequently exposed to media were 18% less likely to experience malnutrition than those who were not exposed to media. This can happen because those who are often exposed to media such as television, newspaper, and radio, obtain information about health programs, balanced nutrition, and the importance of a variety of foods. Thus, increasing media exposure to health programs has a role in addressing undernutrition in young women. Another thing to tell in this study malnutrition is greater in rural residents than in urban residents. Because, maybe their educational status, because in rural areas most of the population is illiterate which it so hard for them to access information about health problems for villagers. Food security in rural areas depends on human and natural resources such as rain or weather patterns, agricultural knowledge and human capital. Thus, nutrition education such as a equal diet and food security is urgently needed for rural residents (Negash et al., 2022).

After analyzing the factors that influence malnutrition (CED, underweight, undernourished, undernutrition, and thinness) are various things. The prevalence of thinness is higher for young women in urban areas than for young women in rural areas (Alemu et al., 2021). Low media exposure, availability of latrines, and unprotected sources of drinking water in the lower middle class are important factors contributing to rural young women. This may be due to the fact that unprotected drinking water sources lead to infectious diseases, bacteria, and intestinal parasites resulting in the depletion of micronutrients and eventually leading to malnutrition (Negash et al., 2022). This can be seen as an opportunity for the government, for regions that lack basic facilities, health facilities, education facilities, infrastructure and others. Lack of hygiene in particular causes infectious diseases and correlates strongly with the occurrence of acute malnutrition. So that this scientific evidence can be used to strengthen the implementation of government programs (Chattopadhyay et al., 2019).

CONCLUSION

Chronic Energy Deficiency is a certain condition that is chronically in an energy imbalance, where energy consumption is lower than the energy needs that should be needed. Generally, chronic energy deficiency can be seen from the size of the mid upper arm circumference, which is <23.5 cm or BMI <18.5 kg/m^2.

The factors that can affect CED or malnutrition in young women based on the articles obtained are the behavior of eating both macronutrients and micronutrients, perceptions of body image, religion, low media exposure, availability of latrines, and unprotected sources of drinking water, type of diet, marital status, media exposure, unprotected sources of drinking water, employment status, region and place of residence. Although there are several factors that are not statistically significant, their impact on nutritional status cannot be avoided.

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