FAD DIETS, EATING HABITS, AND NUTRIENT ADEQUACY IN FEMALE MODELS IN MALANG

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Abstract. Nowadays, beauty standards challenge women to transform; having a thin body with a small waist is one ideal perspective, especially for female models. These appearance standards bring forth the urge to fit in by means such as weight loss. Most females tend to utilize unhealthy weight-loss methods, commonly via fad diets. In Indonesia, most women suffer from chronic energy deficiency due to fad diets and incorrect dieting methods. This study's purpose was to analyze diet methods in fad diets, food categories, and female models' nutrient adequacy in Malang. This was a cross-sectional study involving 52 models aged 18-25 years. Fad diet participation was measured by fad diet questionnaires while food habits were measured using the SQ-FFQ intake of eight food groups, including grains, eggs, fish, meat and processed meat, vegetables, fruits, and sugar-sweetened food and beverages. Nutrient adequacy was measured using food recall in the last 2x24 hours. The data analysis was done using a Chi-square test. The study result illustrated that fad diets were done by most of the respondents (69.9%). Healthy nutritional pattern found in respondents consisted of whole grains, eggs, dairy, fish, meat, vegetables, and fruits (30.7%). Unhealthy dietary habits included sugar-sweetened beverages and fat intake (69.3%). Moreover, most respondents had inadequate nutritional adequacy (77.8%). There was a correlation between fad diets and nutritional adequacy (p=0.021). In conclusion, most female models were experienced in fad diets, and had insufficient nutrient adequacy.

Keywords: fad diets, eating habits, nutrient adequacy, female, models

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INTRODUCTION

Appearance is taken into serious consideration and thought to be critical for a woman; therefore, ladies frequently evaluate their bodily appearance, especially their frame shape. Certain body types are considered extra attractive, especially among female models who are demanded by agencies and the environment to change their body shape. They may have a sense of dissatisfaction with their entire body due to the amount of social pressure to have strong character and be perfect humans, both technically and artistically. These standards include having a thin body, low body weight, and low-fat percentage (Vidianinggar et al, 2021). Fashion models have a demand to look attractive and have an ideal body; someone who works as a model tends to care about their body shape and is at risk of experiencing body dissatisfaction. Self-dissatisfaction encourages some female models to make weight loss efforts by doing a "diet". In addition, fashion models have an average body mass index below normal (17.5 kg/m^2). The adolescent model population is one of the most high-risk populations for experiencing nutritional problems because they have a strong desire to be thinner compared to non-model groups (Rice and Dolgin, 2011). The weight-loss methods used by adolescent girls are, on average, unhealthy or commonly called fad diets (Wijanarko et al, 2021). Fad diet is a diet that becomes popular for a short time, similar to fads in fashion, without being a standard dietary recommendation, and often making unreasonable claims for fast weight loss or health improvements. Media contributes to the recognition of fad diets as they

position stress to those who prefer a positive frame image, which leads to shallowness and possibly disorders. Weight loss that happens too fast, a majority of the misplaced weight being water and muscle, and fat tissue loss define fad diets. Despite the truth that fad diets can attract young women as an easy manner to lose weight, current research has proven that such diets are unsustainable in the long-term, and may deliver unfavorable health outcomes.

A diet that is continuously carried out with the wrong method will result in insufficient nutrition in the body. Inadequate nutrition will also disrupt the metabolic processes in the body, which may result in conditions such as hypoglycemia (Almatsier, 2004). The meaning of the term proper diet according to nutrition science is to regulate the amount of food consumed in accordance with the daily energy adequacy. Of course, if there is less nutrition, the amount of energy must be increased, and vice versa if there is more nutrition, the amount of energy must be reduced. Diet includes varied behavioral patterns, from choosing foods that are good for health to very strict restrictions on nutritional adequacy related to calorie consumption. The nutritional adequacy of each individual is not the same, depending on several things. Among them are gender, physical activity, and age. Thus, the application of a good diet that is adjusted to the adequacy of daily nutrients can maintain or lose weight on a regular basis.

Indonesian Ministry of Health recommended daily average adequacy of nutrients as follow: very poor (<70% energy sufficiency), less (70-100% energy sufficiency), normal (100-130% energy sufficiency), and more (>130% energy sufficiency) (Ministry of Health Republic of Indonesia, 1990). Currently in Indonesia, the prevalence of underweight in adolescents aged 13-15 years is 11.1% while in adolescents aged 16-18 years, the prevalence of underweight is 9.4%. East Java Province is one of the provinces where the frequency of underweight was essentially unchanged between 2007 and 2013, although the prevalence of being

extremely thin grew by 0.4%. On the other side, the incidence of obesity climbed from 1.4% in 2007 to 7.3% in 2013. According to the Data Center of the Ministry of Health of the Republic of Indonesia in 2014, the average energy adequacy of the Indonesian population was only 76.6% with 45.7% of the Indonesian population consuming energy <70% and 5.9% of the population consuming energy >130% (Ministry of Health Republic of Indonesia, 2019). In addition, the average level of energy adequacy in the age group 19-55 years is of 73.8% with the proportion consuming >130%. There are just 4.6% of people in the 19- to 55-year-old age group that are energy adequate. The majority of young women (67.8%) only eat less than three times each day.

In Indonesia, there have not been many studies on deviant consuming conduct due to the fact it is considered a trivial problem. In truth, this consuming ailment may be due to numerous incorrect perceptions, such as diverse efforts to shed pounds referred to as fad diets that bring about insufficient nutrient consumption and increase the threat of lifelong fitness issues. If this is not anticipated by providing good education regarding individual nutritional needs it will provide opportunities for female models to experience long-term malnutrition which will affect physical, psychological and health problems in the future.

This groundbreaking research offers a unique advantage by delving into the intricate relationship between fad diets, eating habits, and nutrient adequacy among female models in Malang. Unlike previous studies that have primarily focused on the nutritional aspects of these diets, this research extends its scope to encompass the psychological dimensions of dietary behavior and eating patterns among this specific demographic. By adopting a multidisciplinary approach, it not only sheds light on the nutritional challenges faced by female models but also explores the psychological factors influencing their dietary choices. This holistic perspective enhances our understanding of the complex interplay between

dieting trends, eating behaviors, and nutrient intake, ultimately providing invaluable insights that can inform both nutritional interventions and psychological support strategies for this population.

MATERIALS AND METHODS

This study turned into an observational analytic examination with a cross-sectional layout performed in March to May 2020 in numerous fashion agency in Malang. Inclusion criteria were women aged 18-25 years old, registered with fashion agency in Malang, active within the previous month, and were not sick or recovering from sickness. Those who no longer experienced metabolic issues or consuming issues were excluded. The fad diet (popular diet without being a standard dietary recommendation, and often making unreasonable claims for fast weight loss or health improvements) information had been acquired by means of a questionnaire. This questionnaire carried 10 questions including questions on nutritional efforts and closed questions (Yes/No) to measure the approximate varieties of fad diets that respondents had done or were presently doing. Healthy answers were worth two points, while unhealthy answers were worth one. A score of more than nine showed the use of fad diets.

Food habits were measured using semi-quantitative food frequency questionnaire (SQFFQ) were tested. The validity was assessed by comparing the SQFFQ with the 'standard' method of 3 days' dietary recall, and the reliability was assessed by comparing the first SQFFQ with the second SQFFQ at 4 weeks interval which was adapted from the Indonesian people's food guide intake of eight food groups, including grains, eggs, fish, meat and processed meat, vegetables, fruits, and sugar-sweetened food, and beverages (Ministry of Health Republic of Indonesia, 2019).

Nutrition adequacy was measured through interviews on 2x24 hour meal recollection for two non-consecutive days. These data were processed through the Nutrisurvey and compared with the 2019 nutrient adequacy ratio by Indonesia Ministry of Health (Ministry of Health Republic of Indonesia, 2019) for women aged 18-25 years. The results were categorized as less than adequate (77% RDA average intake).

Data were evaluated with a Chi-square test by (SPSS) version 26 (Chicago, IL) The Chi-square test interpreted the value of r, which is the contingency coefficient. Data evaluation was done to study whether there was a relationship between variables.

This study was approved by the Ethics Committee of the Faculty of Dentistry of Universitas Airlangga, Surabaya on 13 April 2018 with the approval number 121/HRECC.FODM/III/2020.

RESULTS

The result of this study that most of the women were in the early maturity stage with the inclusion criteria 18-25 years models, with a median age of 21 years. A model's productive period occurs throughout the ages of 18-25 years, or for about six years. This professional route has a massive effect on their weight concerns. This triggers the emergence of fad diets and insufficient nutrient intake.

Based on Table 1, it can be seen that greater than half of the respondents (69%) had been or had made an attempt to shed pounds through the usage of craze diets. These diets were found to be high in fat - especially saturated fat, sugar, and protein - and low in total carbohydrates and fiber. Table 2 shows how the nutrient consumption by Female models in energy, total fat, SFA, MUFA, PUFA, protein, total CHO, fiber, vegetables, and fruit. Table 2 shows an overview of

nutritional consumption figures compared with recommendations from the Indonesian Ministry of Health regarding the fulfillment of nutrients in one day. Based on the 2x24 hour recall in this study, it was found that 77% of respondents did not meet the recommended RDA and Nutritional adequacy levels, including energy and macronutrients, can be seen in Table 3.

Table 1
Characteristics of female model respondents

Characteristics	Frequency *n* (%)
Age (years)	
18-20	18 (35)
21-23	21 (40)
23-25	13 (25)
Height (centimeter)	
156-161	12 (23)
162-167	15 (29)
168-173	19 (37)
174-179	6 (11)
Weight (kilogram)	
40-45	10 (19)
46-50	21 (40)
51-55	14 (27)
56-60	7 (14)
Experienced of diet	
Fad diet	36 (69)
Not fad diet	16 (31)

Table 2
Nutrient and food intake of female models in Malang

Nutrient intake	Amount	Percent of fulfillment by recommended dietary allowance (%)
Energy	1,192.653 kcal/day	54
Total fat	48 g/day	69
SFA	28 g/day	54
MUFA	21 g/day	41
PUFA	19 g/day	31
Protein	42 g/day	70
Total CHO	161 g/day	54
Fiber	12 g/day	50
Vegetables	120 g/day	50
Fruit	165 g/day	61

CHO: Carbon, Hydrogen and Oxygen; g: gram; kcal: kilocalories; MUFA: Monounsaturated fatty acids; PUFA: polyunsaturated fatty acids; SFA: saturated fatty acids

Table 3
Distribution of nutrition adequacy (energy and macronutrient) in female models in Malang

Category	Frequency *n* (%)
Adequate nutrition	12 (23)
Inadequate nutrition	40 (77)

Adequate nutrition: 80 - 100% RDA (recommended dietary allowance)
Inadequate: 0 - 80% RDA (recommended dietary allowance)

DISCUSSION

Majority of female models tend to reduce their weight with fad diet. The fad diet method is considered unhealthy because this diet directs a person to consume few calories and nutrients (Khawandanah and Tewfik, 2016). This type of unsafe diet can pose a risk of various health problems such as ketosis, disruption of fluid, and electrolyte balance, to cause kidney damage. It is believed that these negative health impacts are linked with the stress hormone called cortisol. These feelings and continuous dieting can result in unhealthy eating habits, which can continue over someone's lifetime. The fear of being fat can also lead to eating disorders from a young age, such as anorexia nervosa and bulimia. In both disorders, sufferers show body image distortions and feelings of anxiety and shame about eating.

Most female models still had protein adequacy levels below the RDA recommendation. Based on the recall results, the female models' average protein intake was 42 grams per day (70%). Food sources of protein that were widely consumed included low-fat milk, cheese, chicken, beef, eggs, tempeh and tofu. The low protein consumption is due to some respondents only consuming vegetables and fruit in a day (Khawandanah and Tewfik, 2016). Protein has a main function to help and maintain tissue, produce neurotransmitters for brain and nerve function, produce other amino acids, form various hormones, maintain the immune function, maintain fluid balance, and as an energy source (Owen et al, 2012; Cash and Smolak, 2011). Lack of protein intake for a long time will result in decreased rate of growth and muscle mass (Talbot et al, 2019).

Meanwhile, the average fat intake for the female models was 48 grams per day (69%). Fat sources in food that we know related to palm oil, milk, cheese, and meat consumption. However, there were some respondents who did not meet the fat needs because they were on a diet and not consuming fried processed foods. In addition to fat derived from

food, fat contained in the human body also has a function as a protective device for important body organs, maintaining body temperature, transmitting nerve impulses, cell membrane structure, and precursors of metabolic functions (Blake et al, 2007).

One method of fad diets is to reduce one's consumption of nutrients such as carbohydrates for a long time. This will affect cognitive function because glucose is needed by the brain 20% of the total intake (Owen et al, 2012). There are many health effects of being underweight, namely reproductive, bone and brain problems. Leptin decreases with weight loss. Without adequate levels of the leptin cascade the functions to control hormonal events such as ovulation and implantation are disrupted (Evans et al, 2021). Menstruation becomes irregular or a decrease in fertility. Insufficient nutrition can inhibit bone development (in the growth phase) and reduce bone remodeling and repair, leading to osteoporosis (Levis and Lagari 2012). In humans, the brain accounts for 20% of the energy expenditure of the individual and plays a key role in nutritional homeostasis (Morton et al, 2014)

In summary, most female models had used the fad diet method, had energy, protein, total carbohydrate, fat, and micronutrient adequacy levels below the RDA recommendation; this indicates inadequate nutritional intake in the body. These female models are expected to increase daily eating frequency from twice a day to three times a day by implementing a balanced nutritionally appropriate diet through consultation with a nutritionist to achieve their ideal body.

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CONFLICT OF INTEREST DISCLOSURE

The authors declare no conflict of interest.

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