

RESEARCH STUDY

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The Relationship between Fad Diet, Body Image, Stress, Peer Pressure with Eating Disorders in Adolescent Girls Aged 16-18 Years

Hubungan Fad Diet, Citra Tubuh, Stres, Tekanan Teman Sebaya dengan Gangguan Makan pada Remaja Putri Usia 16-18 Tahun

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ABSTRACT

Background: Girls experience increases in body fat and weight from puberty through late adolescence. In order to achieve their ideal body weight, young women as a consequence changed their eating habits, exercised, took care of their bodies, and used diet pills among other things. Eating disorders are caused by this practice. Persistent eating disorders can result in illness among those affected.

Objectives: The aim of this research was to examine how eating disorders in female teenagers are related to fad diets, body image, stress, and peer pressure.

Methods: An observational research methodology employing a cross-sectional analytic polling design was utilized. Purposive sampling Simple random sampling was used to collect data from a total of 111 individuals. From July to August 2022, the study was carried out in several secondary schools in Malang City.

Results: Research results revealed a significant connection between binge eating disorder and body image ($p=0.002$), stress ($p=0.001$), and social pressure ($p=0.000$). However, there was no observed association between fad diets and binge eating disorder. Eating disorders exhibited a multivariate relationship with fad dieting, body image, stress, and peer pressure, as evidenced by a Nagelkerke R square value of 0.595.

Conclusions: There is a correlation between eating disorders and fad diets, as well as stress, peer pressure, and body image.

INTRODUCTION

Teenagers' nutritional requirements change as a result of rapid growth in adolescence because it alters the makeup of adolescent body development, changes in body weight and bone mass, as well as physical activity¹. Adolescence categorized into four distinct stages: (1) preadolescent or prepubertal phase (10-12 years), (2) early adolescence or puberty stage (12-15 years), (3) mid-adolescence (15-18 years), and (4) late adolescence (18-21 years). The period from early to late teens is collectively referred to as adolescence².

At this age, the onset of pre-puberty triggers the development of pubic and chest hair, along with the hormone estrogen. Puberty represents the final phase of these physical changes, and they usually undergo significant transformations that are hard to avoid. These changes contribute to a more stable body image, leading to a consolidation towards maturity during late adolescence, typically at ages 19-20. As teenage girls

approach puberty and move into late adolescence, they encounter a rise in body fat, causing their bodies to deviate further from the perceived ideal shape. On the other hand, teenage boys experience an increase in satisfaction as their muscle mass grows. When a person encounters extreme disturbances in their eating behavior, for instance, reducing their food consumption due to excessive eating, excessive food consumption, or extreme body image concerns, eating disorders can develop³. Deviant eating patterns are another term frequently used to describe eating problems. It is a mental illness that is defined by behavioral abnormalities, abnormal eating patterns, and feelings of suffering from extreme concern about weight⁴.

Numerous studies have demonstrated that eating disorders affect adolescents in Indonesia; for example, in Jakarta, 37.3% of adolescents report having a particular eating disorder. 27% of teenagers have bulimia nervosa, and 11.6% of them have anorexia nervosa⁵. Additionally,

it was discovered that 67.8% of the Semarang model group of young women had a propensity toward eating disorders, with specific tendencies of 8.5% for anorexia nervosa, 23.7% for bulimia nervosa, 3.1% for binge eating disorder, and 3.1% for binge eating disorder⁶. According to data from the Institute for Health Metrics and Evaluation (IHME), the overall count of individuals affected by eating disorders in East Java amounted to 41,605 cases.

Teenage eating problems are correlated with the methods used to lose weight, including dieting. Most of the eating habits practiced by teens are unhealthy eating habits, or what are frequently referred to as fad diets. Diet trends are defined by the American Heart Association as weight loss initiatives that prioritize increasing physical exercise while restricting particular food types and portions, not varying menus, and using drugs and supplements. Fad diets are viewed as unhealthy because they advise adherents to consume scant amounts of calories and minerals⁷. Eating disorders are intensified by dietary behaviors characterized by strict food restrictions and excessive exercise⁸. These practices can lead individuals to gain weight and prompt them to engage in dieting or strongly encourage them to modify their eating habits. As a result, they may not immediately eat when hungry, yet still experience persistent feelings of hunger. Eating disorders are exacerbated by dietary practices that frequently include severe food limits and excessive exercise⁸. A person who feels as though he has just finished eating may feel proud, joyful, or even satiated. The cycle continues. However, because they are unaware of healthy eating practices that influence eating habits, teenagers actually experience eating disorders like anorexia nervosa and bulimia nervosa⁹.

Teenagers' concerns about their bodies can lead to eating disorder behavior and changes in their body shape during puberty. Ongoing body image concerns are the root cause of eating disorders. Positive and negative body image are separated. People who have a positive view of their bodies are content with how they look and feel about themselves. They are also open to changing their body shape. This contrasts with individuals experiencing negative body image, wherein they perceive a disconnect between their appearance and the societal ideal body type. They feel dissatisfied with how they look and may be influenced by media and social contexts¹⁰. Young men, on the other hand, show differences in their experiences of negative body image¹¹.

In addition to body image, stress is another factor that contributes to eating disorders. Despite the fact that one of the effects of stress can be an increase or decrease in appetite (also known as an eating disorder). Anorexia nervosa, bulimia nervosa, and binge eating are all linked to stress because stress affects appetite and food preferences, either by decreasing appetite or by increasing it. When under stress, the body will release hormones that will make it more appealing to choose foods high in fat, sugar, and flavor, which will encourage overeating and lead to eating disorders¹². Teenage females who suffer from eating disorders frequently experience high levels of stress, anxiety, or even depression¹³. There is a positive correlation between

stress levels and eating disorders, which means that eating disorders are more likely to appear when stress levels are higher and less likely to occur when stress levels are lower¹⁴.

According to research, there is a significant correlation between social influence and eating behavior, which suggests that peer pressure is a factor in the development of eating disorders in adolescents¹⁵. Peer pressure affects how people make food decisions, which can result in the start of unhealthy habits like excessive dieting, the use of laxatives and diet pills, and booze consumption. If this is consistently practiced, eating problems will develop¹⁶. When it comes to maintaining a healthy lifestyle, peer influence plays a significant societal role. Peer social support can have both good and negative effects on a person's ability to maintain healthy behavior. Peer support typically takes the form of fresh perspectives or insights gained through direct offers and compatibility factors¹⁷. If peer support is used effectively, it can have a beneficial impact on a person's healthy behavior. This is in line with the idea that a person's peers tend to have more of an impact on their behavior, in this instance, healthy behavior. Peers who are being targeted share the same generation and are close friends. This study examined how eating disorders in teenage girls aged 16 to 18 are associated with fad diets, body image, stress, and peer pressure.

METHODS

This study is an observational one with a cross-sectional design strategy and an analytical survey methodology. From July to August 2022, the study was carried out at a high school in Malang, East Java. As many as 10355 individuals in Malang City are female students. Using the Purposive Sampling method and slovin to get the sample, it's found that the total of samples 111 individuals who met the inclusion and exclusion criteria were chosen from the community. The research population consists of high school female students in Malang City, totaling 10,355 individuals. Using the Slovin formula, the sample size is determined to be 111 individuals. The sample is selected through purposive sampling from three selected high schools: SMA 4 Malang, SMA 6 Malang, and SMA 8 Malang. Subsequently, for the selection of samples from different classes in each school, simple random sampling is employed, resulting in 32 students from SMA 6 Malang, 39 students from SMA 4 Malang, and 44 students from SMA 8 Malang. The schools included in this research were SMA 4, SMA 6, and SMA 8 in Malang City. SMA Negeri 4 Malang has 6-9 classes for each level, and the chosen classes for this study were XII IPS 1, XII IPA 2, and XI IPA 3. Similarly, SMA Negeri 6 Malang offers classes in Science, Social Studies, and Language, and the selected samples consisted of students from X Language, X IPS 1, and XI IPS 2. SMA Negeri 8 Malang provides classes in Science, Social Studies, Language, and KBC, and the chosen sample was from XI IPS 1. During the data collection, the researcher was accompanied by a supervising teacher from each school. The study's inclusion requirements were female students between the ages of 16 and 18. Students who declined to participate in the study as research participants were

excluded from it.

Data were gathered for this study using a questionnaire. A fad diet quiz was developed to determine whether respondents had ever tried one in Indonesian. A questionnaire is used to measure fad diet behaviors based on aspects such as specific food restrictions, excessive exercise, and overconsumption of laxatives, using a modified fad diets questionnaire by Hana and Rafiq, 2014. Based on a previous validation test with adolescent subjects, the validity coefficient of each question item is above 0.3, and the reliability value of the fad diets questionnaire is 0.756⁹.

Scale of Multidimensional Bodily Self-Relations and Appearance (MBSRQ-AS) The MBSRQ has developed into a widely used, thoroughly verified tool with component subscales that assess multiple dimensions of the body image construct in Indonesian. A questionnaire is used to measure body image based on aspects from Chaplin, 2011, using the Multidimensional Body Self-Relations Questionnaire-Appearance Scale (MBSRQ-AS). The questions in the questionnaire represent each aspect of body image: appearance evaluation, appearance orientation, satisfaction with body parts, fear of gaining weight, and perception of body size. The result of reliability testing for the instrument Multidimensional Body Self-Relations Questionnaire – Appearance Scale (MBSRQ – AS) with adolescent subjects is 0.710. This number indicates that the instrument falls within the range of high reliability¹⁸.

Using the Depression Anxiety Stress Scale, assess your stress (DASS). A questionnaire that measures melancholy is called the Depression, Anxiety Stress Scale (DASS) 42. When using the DASS 42 questionnaire to evaluate depression status, a high score indicated a worsening condition in Indonesian. A questionnaire is used to measure stress based on stress aspects from Sarafino, 2014, which are biological and psychological aspects, using the Depression Anxiety Stress Scale (DASS). In a study involving adolescents aged 16-18 years, the results of reliability testing using the test-retest method yielded a good result of $r=0.95$ ($r > 0.70$). This measurement tool exhibits a satisfactory level of consistency, and it can be concluded that the DASS 42 is reliable and valid as a measurement tool to assess stress levels¹⁹.

Peer group impact was evaluated using the Peer Pressure Inventory (PPI). There were two items on the Peer Pressure Inventory questionnaire that described how peers affect one another in Indonesian. A questionnaire is used to measure peer pressure based on the aspects of Isra (2017), namely Interaction, Messages, and Likeability, using the Peer Pressure Inventory (PPI) questionnaire. The peer pressure scale consisted of 15 statement items, and after testing, the reliability coefficient was 0.748²⁰.

Evaluation of Weight Disorders (anorexia, bulimia, and binge eating disorder) The 22-item Eating Disorder Diagnostic Scale was created to assess the symptoms of Anorexia nervosa, Bulimia nervosa, and Binge Eating Disorder in accordance with the DSM-IV diagnostic standards in Indonesian. A questionnaire is used to measure eating disorders based on aspects from David Garner, which include Dieting scale items, Bulimia and Food Preoccupation scale items, and Oral Control subscale items, using the Eating Disorder Diagnostic Scale (EDDS). EDDS has shown strong reliability test results ($\kappa = 0.87$). Similarly, the internal consistency of the combined overall symptom scores is strong (Cronbach's $\alpha = 0.91$)²¹. SPSS Software 22.0 is used to code and evaluate the collected data. The chi-square test is used for bivariate analysis, and regression is used for multivariate data analysis. The Research Ethics Committee of the Faculty of Medicine at Sebelas Maret University gave its approval to this study protocol (No: 100/UN27.06.11/KEP/EC/2022).

RESULTS AND DISCUSSION

The study involved adolescent girls from Malang City Senior High School, specifically from classes X, XI, and XII, who were selected based on inclusion and exclusion criteria. Among the participants, approximately 45% of the young women were found to be 16 years old. It is known that the majority of respondents to this research (87%), followed a fad diet. 90% of adolescent women express some level of body image dissatisfaction. 62% of the adolescents in this survey reported mild stress. 72% of the young women in this survey reported being subject to peer pressure. The majority of the young women in this research suffered from binge eating disorders (50%), bulimia (7%), and anorexia (22%).

Table 1. Frequency distribution of respondent characteristic of adolescent girls aged 16—18 years in Malang City

Characteristic	N	%
Age		
16	49	45
17	41	36
18	21	18
Fad diet		
Not undergo fad diet	14	13
Undergo fad diet	97	87
Body image		
Satisfy	10	9
Dissatisfied	101	90
Stress		
Normal	41	36
Mild stress	70	62
Peer pressure		

Characteristic	N	%
No peer pressure	30	27
Peer pressured	81	72
Eating disorder		
Anoreksia	25	22
Bulimia	8	7
Binge eating disorder	56	50

Table 2. Bivariate analysis of the relationship between fad diet, body image, stress, and peer pressure and anorexia in adolescent girls aged 16—18 years in Malang City

Variable	Eating Disorder		p-value*
	Not Anorexia	Anorexia	
	n	n	
Fad Diet			
Undergo Fad Diet	13	1	0.125
Not Undergo Fad Diet	73	24	
Body Image			
Satisfied	10	2	0.463
Dissatisfied	76	23	
Stress			
Normal	30	11	0.273
Mild Stress	56	14	
Peer Pressure			
No Peer Pressure	23	7	0.543
Peer Pressured	63	18	

*p-value obtained from Chi Square correlation test results. Significantly related ($p < 0.05$)

The Relationship between Fad Diet and Eating Disorders

The significance threshold (p -value) for the variables related to eating disorders and fad diets was greater than 0.05, indicating no significant relationship between fad diets and eating disorders. However, it is essential to be cautious of dangerous diets like fad diets, as they increase the risk of various health issues, including severe conditions such as digestive disorders, ketosis, water and electrolyte imbalances, and kidney damage²². These diets often fail to provide sufficient nutrients for young women. Therefore, it is crucial to fully understand the energy requirements of young women and how to meet these needs in a healthy and adequate

manner. By having this knowledge, unhealthy eating habits like excessive dieting can be avoided.

Eating problems are more prevalent among young women, mainly due to their concern about attaining desired body types²³. Their eating habits are heavily influenced by the desire for a particular body shape, rather than their understanding of food itself. They often focus on calorie counting and restrict their food intake when they feel they are eating more than necessary. However, they may struggle to determine their actual daily caloric requirements, leading to potential imbalances²⁴.

Table 3. Bivariate analysis of the relationship between fad diet, body image, stress, and peer pressure and bulimia in adolescent girls aged 16—18 years in Malang City

Variable	Eating Disorder		p-value*
	Not Bulimia	Bulimia	
	n	n	
Fad Diet			
Undergo Fad Diet	13	1	0.735
Not Undergo Fad Diet	90	7	
Body Image			
Satisfied	12	0	0.388
Dissatisfied	91	8	
Stress			
Normal	41	0	0.021*
Mild Stress	62	8	
Peer Pressure			
No Peer Pressure	27	3	0.371
Peer Pressured	76	5	

*p-value obtained from Chi Square correlation test results. Significantly related ($p < 0.05$)

The Relationship between Body Image and Eating Disorders

The significance threshold (p -value) for the variables related to binge eating disorder and body image was found to be $0.002 < 0.05$, indicating a significant influence of body image on binge eating among adolescent girls with eating disorders. Approximately 14.3% of the respondents were identified to have a high risk of developing eating disorders, showing a meaningful association ($p=0.04$). Positive body image has a preventive effect on eating disorders in young women²⁵. The rapid changes in their bodies during adolescence make young women more conscious and concerned about their appearance, which may lead to restricting their food intake²⁶. Social influences play a significant role in shaping one's perception of body image. For example, young girls may believe that fair skin, a slim figure, and normal-sized large breasts are attractive traits, leading some adolescents to take the wrong path in trying to achieve this ideal. It is important to recognize that body image is a subjective psychological concept, and appearances should not be used as a standard, as even teenagers with seemingly ideal bodies can struggle with negative body image²⁶.

Negative body image can lead to the

development of eating disorder tendencies, as the desire to maintain a desirable appearance intensifies with a wider gap between the desired and actual weight, potentially leading to the risk of anorexia nervosa. Studies by Kurniawan showed a significant link between self-rated weight and the Obesity Concern subscale (fear of fat) (height category). In Natarijadi and Hadiati's research, individuals who placed a higher value on physical attractiveness, particularly on the Appearance and Orientation subscale and the Obesity subscale (fear of fat), were more susceptible to developing eating disorders²⁷. Consequently, teenagers who are dissatisfied with their physical appearance are more prone to developing eating disorders. This aligns with positive correlation studies that reveal a lesser likelihood of replicating bulimia nervosa (BN) and anorexia nervosa (AN) risk factors in respondents with more positive body images²¹. The results of this study revealed that fad diet ($p=0.125$), body image ($p=0.463$), stress ($p=0.273$), and peer pressure ($p=0.543$) were not related with binge eating disorder, anorexia-type eating disorder, or bulimia nervosa. Furthermore, there was no relation between fad diet ($p=0.735$), body image ($p=0.388$), stress ($p=0.021$), and peer pressure ($p=0.371$) with bulimia.

Table 4. Bivariate analysis of the relationship between fad diet, body image, stress, and peer pressure and binge eating disorder in adolescent girls aged 16—18 years in Malang City

Variable	Eating Disorder		p-value*
	Not Bing Eating Disorder	Binge Eating Disorder	
	n	n	
Fad Diet			
Undergo Fad Diet	5	9	0.206
Not Undergo Fad Diet	50	47	
Body Image			
Satisfied	11	1	0.002*
Dissatisfied	44	55	
Stress			
Normal	29	12	0.001*
Mild Stress	26	44	
Peer Pressure			
No Peer Pressure	24	6	0.000*
Peer Pressured	31	50	

*p-value obtained from Chi Square correlation test results. Significantly related ($p<0.05$)

The Relationship between Stress and Eating Disorders

The significance threshold (p -value) for the stress variable in relation to binge eating disorder was $0.001 < 0.05$. This indicates that stress significantly affects female teenage eating disorders characterized by binge eating. Stress is a type of bodily response to emotional stress or the difficulties one is experiencing in life. Teenagers who are unable to manage their tension could have a dangerous effect because stress can lead to depression. The level of tension will have an impact on abnormal eating habits that may lead to eating disorders. A dysfunctional physiological stress reaction has been linked to the pathophysiology of eating disorders, and stress hormones have an impact on hunger and eating. A potential mechanism for the role of stress in appetite dysregulation is the relationship between stress signaling

and the food reward neurocircuitry response in eating disorders²¹. The findings of this study are consistent with earlier research that found a link between stress levels and eating disorders. In that study, 37 respondents (88.1%), who fell into the moderate stress group, all reported having some level of stress. Data analysis produced a significance value of 0.000 ($p < 0.05$) for the eating disorder group, which included 36 people (or 85.7% of the total population). According to Lestari's research, worry can lead to eating disorders. This is due to the fact that under stress, individuals tend to overeat or hesitate to eat. With a p -value of 0.001¹¹, Lestari discovered a link between stress levels and eating problems. This is a result of some young women with high levels of stress having improperly managed their diets and forgetting what is healthy for them. eating loads and

loads of the tasks that the teacher has assigned.

The Relationship between Peer Pressure and Eating Disorders

The significance threshold (p -value) for the variables related to peer pressure and binge eating disorder was $0.000 < 0.05$. This indicates that female teenage binge eating disorders are significantly influenced by peer pressure. Peers can place a lot of pressure on girls because of their expectations; if they disobey or fail to live up to their friends' expectations, a teen may face rejection, mockery, and gossip. Peers may have unfavorable influences, such as encouraging

unhealthy eating patterns and weight loss attempts. Up to 25% of adolescents think that having a slimmer body will make it simpler for them to find romantic partners and acquaintances⁵. It is thought that individual aberrant eating behavior occurs naturally in groups. If a group adheres to the same ideal body design standards and values, then group members who do not have the ideal body as described in the group will attempt to alter themselves in order to comply with the values and rules regulated in the group²¹. Peer pressure predicts eating and binge eating habits as well as controlled and autonomous drive. In addition, social pressure has a direct impact on binge eating²⁸.

Table 5. Multivariate Correlation between fad diet, body image, stress, peer pressure and eating disorder in adolescent girls aged 16–18 years in Malang City

Variable	Wald	P value	OR	95% CI		Nagelkerker R Square*
				Lower scale	Upper scale	
Fad diet	0.262	0.609	0.560	0.061	5.152	0.595
Body Image	5.552	0.018*	8.858	1.443	54.367	
Stress	13.616*	0.000*	23.759	4.417	127.905	
Peer Pressure	12.484	0.000*	16.382	3.471	77.271	

*p-value obtained from Chi Square correlation test results. Significantly related ($p < 0.05$)

*Nagelkerker R Square obtained from logistic regression test result. It measures the proportion of the total variation of the dependent variable can be explained by independent variables in the current model

*Wald obtained from logistic regression, it is used to determine statistical significance for each of the independent variables, the highest means the most statistical significance

The Relationship between Body Image, Stress, Peer Pressure and Eating Disorders

According to Table 5, the Nagelkerke R Square value is 0.595%, meaning that fad diets, body image, stress, and social pressure account for 59.5% of eating disorders and other factors that are not included in other research models account for the remaining 40%. According to the multivariate fad diet findings, there was no evidence that it was significantly associated with eating disorders. Due to peer and social pressure to adhere to particular body types, fad diets have been widely used for decades. The majority of fad diets place restrictions on the kinds of foods that can be included in a menu plan and do not ensure a balanced diet. Fast weight reduction is promised by fad diets. However, it has a lot of disadvantages, including sustainability risks and bad health. Numerous physiological conditions, including cardiovascular disease, kidney dysfunction, and osteoporosis, as well as psychological impacts, including eating disorders and melancholy, are linked to fad diets⁷.

The p value of 0.018 shows a significant relationship between body perception. Because other factors like knowledge and social media can also influence someone's eating disorder, in addition to body image, there is a substantial correlation between the prevalence of eating disorders and young women who have a negative body image²⁹. Problems with weight, body shape, and eating habits are the three major aspects of disordered eating behavior that can lead to negative body image. Obesity, which can be brought on by a deficiency or excess of nutrients, both brought on by an imbalance between the body's requirements and the absorption of important nutrients, has also been linked to errant eating habits, disturbed body image, and weight gain and loss³⁰. Women who have negative body image

feelings about their bodies and feel unattractive to others try to alter their look through dieting and other methods³¹.

An impact of stress is significant, with a p value of 0.000. Eating problems or poor nutrient absorption in the body³² are two ways that nutrients can change in stressful situations. Affected eating behaviors during stressful times include reduced or increased appetite. Teenagers who are under stress frequently turn to consuming more as a coping strategy, which has been shown to be successful in inducing a cozy euphoria. The body's natural reaction to stressful situations is for the adrenal glands to release more cortisol when levels are higher. We select foods that are rich in sugar, fat, and calories when we are stimulated, which makes us feel hungry and makes us want to eat.

Peer pressure has a substantial impact, as evidenced by its 0.000 p value. Peers and anorexia nervosa tendencies are significantly and unidirectionally correlated, according to prior study. Making new acquaintances can be competitive and selective among friends. Teenagers who are a healthy weight are still criticized and urged to slim down by their classmates. Teenagers' psychosocial traits, which start to rule their looks, are what cause this. Adolescents are also more socially acceptable because of their reliance on their friends. Most of the interviewees were in the middle of adolescence from a social standpoint, so their teenage peers tended to be picky and competitive when it came to making friends.

Determinants of the prevalence of eating problems Numerous factors, including biological, psychological, environmental, and sociocultural ones that have a direct or indirect impact, contribute to the prevalence of eating disorders in teenagers. The

widespread use of social media among adolescents today, as well as the pandemic conditions, are additional contributing factor³³. Body image variables and dietary history are internal variables that demonstrate a connection to eating disorders, whereas gender, knowledge, and self-confidence variables do not. The variables of family influence, social influence, ridicule about body weight or body shape, and the influence of the mass media all show a connection with eating disorders, whereas the variables of sexual harassment and physical violence do not³⁴. One of the things that makes people want to diet more in a sociocultural setting and can lead to an eating disorder condition³⁵ is an exaggeration of the "ideal thin" body makeup and peer pressure. Some of these related solutions can be implemented while maintaining health protocols, such as through efforts such as the use of telemedicine, guided self-medication, the use of applications on smartphones, online support groups, targeting specific eating and food-related challenges which have been shown to have serious consequences for patients with eating disorders³⁶.

CONCLUSIONS

It can be concluded that there is a relationship between fad diet, body image, stress and peer pressure with eating disorders. Further research is needed with different variables. There is an expectation that future research will explore additional factors that may impact the occurrence of eating disorders in young women, including psychological elements, genetic aspects, and various other variables. It is hoped that further research will also examine other factors that can influence the occurrence of eating disorders in adolescent girls, such as psychological factors, genetic factors, and others. It is hoped that future research will have an unlimited timeframe. It is hoped that future research can be conducted in all secondary schools in Malang City/other cities offline.

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