



Factors Affecting Stress and Eating Behavior: Literature Review

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ABSTRACT

Stress is a non-specific response of the body to the problems it receives. High levels of stress can be associated with poor eating behavior, namely eating behavior that does not prioritize health aspects, such as the habit of consuming foods that do not provide essential substances according to body needs, irregular eating patterns, and unhealthy lifestyles, so that it can affect stress and eating behavior. The purpose of this study is to find out what factors affect stress and eating behavior. This Literature Review study analyzed 13 journals from the database, (Google Scholar, Crossref Metadata Search, Research Rabbit, Paperity and Taylor & Francis Online). The results showed that factors that can affect stress and eating behavior, namely; poor sleep quality, obesity, irregular eating patterns, and self-image.

Keywords: *Stress, Eating Behavior, and Pattern of Eating*

1. Main text

According to Sudargo, et al. (2022) eating behavior is a description of a person's behavior towards eating manners, eating frequency, eating patterns, eating preferences, and food selection. Eating behavior has a relationship with health status. Good eating behavior is behavior that shows a selective attitude in consuming daily food, such as being selective in choosing foods according to nutritional needs and managing eating patterns properly. While poor eating behavior is eating behavior that does not prioritize health aspects, the habit of consuming foods that do not provide essential substances such as carbohydrates, fats, and proteins that are sufficient according to the body's needs, this poor eating behavior also shows behavior that is not concerned with and pays attention to health, with a poor diet (Sumartini & Ningrum, 2022).

Currently, many diseases stem from unhealthy eating behavior and consumption of unhealthy foods. According to the Policy Board of the Indonesian Ministry of Health, (2024) unhealthy diets significantly increase the risk of non-communicable diseases, which according to WHO data kill 41 million people each year, or 74% of all global deaths. The main contributors to non-communicable diseases are cardiovascular disease and diabetes. Cardiovascular disease accounts for 17.9 million deaths and diabetes accounts for 2 million deaths annually.

Eating behavior is influenced by technological developments and changes that are in the current system, thus dynamically affecting behavior. The mobility carried out by individuals in various places and circumstances changes their behavior to adapt to the environment and culture where they live. In the urban sphere, for example, various types of food and drinks that are trending and not necessarily guaranteed to be healthy, then the convenience offered by online media in delivery can affect lazy behavior, thus causing obesity. This is in line with the research of Ratnawati & Aswad, (2019) modern living habits followed by society today make people love instant things. As a result, someone is lazy to do physical activity and is more interested in high-sodium fast food.

In addition, eating behavior is also influenced by psychological factors, namely stress. Stress can affect health directly through the autonomic system, neuroendocrine, and biological processes, and indirectly through changes in behavior that affect health. High levels of stress can be associated with increases (e.g. saturated fat consumption) and decreases (e.g. overall calories) in food intake. Increased consumption of sweet, high-fat and more energy-dense foods as a response to stress. Women were found to be more likely to choose high calorie (and fat) foods when under stress (Contrada & Baum, 2011).

Stress can also affect eating behavior, where physical conditions cause a person to have poor eating behavior. Generally, this case occurs in women who feel inferior to a less than ideal body shape and like to compare their appearance with others, so they make unhealthy diet patterns. This is in line with Farida & Murdiana's research, (2024) which concluded that the impact of social pressure related to body image (self body shaming) affects women's eating behavior.

Another psychological influence on eating behavior is emotion. Emotion can refer to the urge to overeat when during emotion. Emotional eating refers to the tendency of some (obese) individuals to eat more when emotional or emotionally aroused, compared to unemotional eaters who show no reactivity to emotions in their eating habits. According to Kaplan, (1957) that (obese) individuals do not learn to distinguish between hunger and

anxiety, thus responding to stress as if it were hunger (i.e., increased eating under stress). Some (obese) individuals have not learned to label physiological cues for example, gastric contractions as hunger (Contrada & Baum, 2011).

Therefore, based on the background above, the author is interested in analyzing and describing what factors can affect stress and eating behavior of a person with various sources that have been reviewed. The purpose of this study is to determine the factors that influence stress and eating behavior.

2. Methods

This research uses a qualitative method, with a literature review model, which is research carried out by summarizing, selecting, and evaluating the content of material from previous research in accordance with the current research objectives (Damarlaksana, 2020). In the review process the author starts by making research questions, using the SPIDER formulation (Sample, Phenomenon of Interest, Design, Evaluation, Research Type) with reference to systematic questions. The research question in this review is, what are the factors that influence stress and eating behavior? The stages in this research. First, the author designs with the search keywords in the database. Second, after the author gets the terms of the research question, the author continues the search with the terms found, namely, stress, eating behavior, and eating patterns. Third, from several search terms, the author entered several databases, namely (google scholar, crossref metadata search, research rabbit, paperity and Taylor & Francis Online). Fourth, after several articles were collected. The author conducts screening from the title and abstract, and continues with the entire manuscript. The following previous journals are presented as data sources for research studies:

Table 1. Data Sources for the Study of Stress Factors and Eating Behavior

No.	Teks Data	Data Code	Data Code Description
1	Poor sleep quality	DT/KH/2023	Authors: Haryana, et al. Year: 2023. Title: Generation Z Lifestyle in the Context of Eating Behavior, Stress Level, Sleep Quality and its Relationship with Nutritional Status: Literature Review. Journal: Journal of Occupational Nutrition and Productivity.
2	Obesity	DT/OR/2021	Authors: Roy, S. K, et al. Year: 2021. Title: Perceived stress, eating behavior, and overweight and obesity among urban adolescents. Journal: Journal of Health, Population and Nutrition
3	Irregular eating patterns	DT/PH/2024	Authors: Hermawan. Year: 2024. Title: The Relationship Between Irregular Eating Habits and Mental Health in College Students. Journal: Healthy Partners Journal.
4	Self-image	DT/CF/2024	Authors: Farida, S & Murdiana. Year: 2024. Title: The Effect of Self Body Shaming on Eating Behavior in Adolescent Girls in Makassar City. Journal: Scientific Scholar Journal.
5	Poor sleep quality	DT/KS/2023	Authors: Simpatik, et al. Year: 2023. Title: Relationship Between Sleep Quality, Stress Level, and Junk Food Consumption with Over Nutrition in Adolescents of As-Asyafi'iyah o2 Jatiwaringin. Journal: Muhammadiyah Journal of Nutrition and Food Science (MJNF).
6	Poor sleep quality	DT/KA/2019	Authors: Afriani, A. E, et al. Year: 2019. Title: Stress Level, Sleep Duration and Quality, and Night Eating Syndrome in Obese and Non-Obesity College Students of the Faculty of Medicine. Journal: Sport and Nutrition Journal.
7	Poor sleep quality	DT/KD/2019	Authors: Damayanti, Eka, R, et al. Year: 2019. Title: Relationship between Sleep Duration and the incidence of Overweight and Obesity in Education Personnel in Campus C of Universitas Airlangga. Journal: IAGIKMI Published.
8	Self-image	DT/CS/2020	Authors: Sari, T. I., & Rosyidah, R. Year:2020. Title: The Effect of Body Shaming on the Tendency of Anorexia Nervosa in Adolescent Girls in Surabaya. Journal: Journal of Psychological Science.
9	Self-image	DT/CR/2023	Authors: Rachmawati, R. Year 2023. Title: The Relationship Between Body Image and the Tendency of Anorexia Nervosa. In UIN Raden Intan Lampung.
10	Irregular eating patterns	DT/PR/2021	Authors: Rizkiana, N & Tanuwijaya, Rahmasari, R. Year: 2021. Title: The Relationship between Eating Habits and Stress Factors with the Incidence of Gastritis at the North Larangan Health Center, Tangerang City. Journal: Journal of The World of Nutrition.
11	Self-image	DT/CS/2023	Authors: Sari, Dewi, K, T. Year: 2023. Title: Physical Self-Concept and Unhealthy Eating Behavior in Young Adult Women. Journal: Journal of The World of Nutrition.

12	Poor sleep quality	DT/PA/2021	Authors: Aritonang, M. Year: 2021. Title: The Effect of Stress and Diet with the Frequency of Disease Recurrence in Patients with Gastritis at Dr. Pirngadi Medan Hospital in 2020. Journal: Journal Pandu Husada.
13	Irregular eating patterns	DT/PU/2021	Authors: Ulfa, Nurmaliza, et al. Year: 2021. Title: The Relationship between Type and Frequency of Eating with Suspect Dyspepsia of UNJA Nursing Undergraduate Students. Journal: Indonesian Nurses Scientific Journal.

Based on the search results, 13 data sources from previous research journals were obtained. These data sources are supporting data sources in analyzing the reviews conducted. Analyzing the data sources above is carried out in accordance with the research focus discussed in this article.

3. Results and Discussion

Based on the analysis of the contents of the journal material that has been reviewed, the author found 4 factors that affect stress and eating behavior. The following are the results of the author's findings:

Table 2. *Stress Factors and Eating Behavior*

No.	Factor	Source Data Code
1	Poor sleep quality	DT/KH/2023
		DT/KS/2023
		DT/KA/2019
		DT/KD/2019
2	Obesity	DT/OR/2021
3	Irregular eating patterns	DT/PH/2024
		DT/PR/2021
		DT/PA/2021
		DT/PU/2021
4	Self-image	DT/CF/2024
		DT/CS/2020
		DT/CR/2023
		DT/CS/2023

Stress is an unspecific response of the body to the problems it receives, which is a universal phenomenon in everyday life and cannot be avoided, and everyone experiences it (Syamsun, 2009). Stress has an impact on individuals, namely on physical, psychological, and intellectual, social, and spiritual aspects, and can also threaten physiological balance. High levels of stress can be associated with increases (e.g. saturated fat consumption) and decreases (e.g. overall calories) in dietary intake. Increased consumption of sweet, high-fat and more energy-dense foods as a response to stress (Contrada & Baum, 2011). So stress can have an impact on a person's eating behavior. The research findings found 4 factors that influence stress and one's eating behavior, so that it also has a negative impact on health, the following are the findings obtained:

3.1 Poor sleep quality

Poor sleep quality is associated with decreased leptin levels and increased ghrelin levels, which increase appetite, hence weight gain. This is related to the hormones that regulate hunger and satiety in the body which are related to poor sleep duration. Meanwhile, in relation to stress, people cope with stress by eating uncontrollably because they are influenced by emotions.

In a study by Haryana, et al. (2023) concluded that generation Z who are currently teenagers and students, they cope with stress by eating uncontrollably because they are influenced by emotions and this if it continues will affect nutritional status. In addition, nutritional status can also be affected directly by the body's circadian rhythm (sleep quality) and through the intermediary of eating behavior. Decreased sleep quality is associated with decreased leptin levels and increased ghrelin levels, which increase appetite. Sleep quality, stress, and eating behavior are all associated with nutritional status in Generation Z, either through the intermediary of eating behavior, or directly. Generation Z's lifestyle should be of concern as they are at higher risk of non-communicable diseases as adults.

In line with previous research, research by Simpatik, et al (2023) also showed that 34.4% were overweight and 14% were obese. Most (83.9%) had poor sleep quality, 63.4% experienced moderate stress and 87.1% consumed junk food. Based on the results of statistical tests, it is known that sleep quality, frequency of junk food consumption, and percent contribution of energy and fat intake from junk food consumption are associated with overweight in adolescents.

Furthermore, based on the results of research by Afriani, et al (2019), sleep quality and sleep duration are related to the nutritional status of the subject. Poor sleep quality and short sleep duration are more experienced by obese adolescents. This is related to hormones that regulate hunger and satiety in the body which are related to poor sleep duration. Short sleep duration results in an 18% loss of leptin and a 28% increase in ghrelin which can lead to a 23-24% increase in appetite. In an environment where food is readily available, short sleep duration provides an opportunity to increase excess intake to >250kcal/day.

In Damayanti's research, et al (2019) also showed the results that short sleep duration was associated with the incidence of overweight and obesity in educational staff in the Campus C UNAIR Surabaya environment. Insufficient sleep duration (>7 hours) has a 7.702-fold higher risk of becoming overweight and obese than those who have sufficient sleep duration (7-9 hours). The shorter the sleep duration, the greater the risk of overweight and obesity.

3.2 Obesity

A person who is overweight or obese cannot differentiate between hunger and anxiety, they have a responding thought that the stress they are experiencing is as if it is hunger striking. Thus an increase in eating under stress according to him is hunger. A person with obesity has not learned to label physiological cues for example, gastric contractions as hunger. In the study of Roy, et al (2021) showed that perceived stress was positively and significantly correlated with eating behavior and body mass index, while physical activity was significantly associated with the prevalence of overweight or obesity and high stress. Obesity in adolescents is 1.13 times more likely to occur in those who have experienced stress due to school or leisure conflicts (95% CI 1.051-1.222), and 1.634 times more likely to occur in those who have uncontrolled eating behavior (95% CI 1.495-1.786).

3.3 Irregular eating patterns

A factor that affects stress and eating behavior is irregular eating patterns. Irregular dietary habits can lead to nutritional imbalances, which in turn can affect brain function and mood. This is because insufficient or unbalanced food intake can reduce blood glucose levels, thus affecting concentration, energy, and impacting stress. Research conducted by Hermawan, (2024) found that based on the Pearson correlation test, there is a significant positive relationship between irregular eating habits and stress levels ($r = 0.45$, $p < 0.01$), anxiety ($r = 0.40$, $p < 0.01$), and depression ($r = 0.42$, $p < 0.01$). This means that the more irregular a college student's eating habits are, the higher the likelihood of them experiencing mental health problems.

Irregular eating behavior can be the cause of increased stomach acid and this can also affect stress. Irregular meal times can increase stomach acid so that it can irritate the stomach which is the cause of gastritis. Artonang's research, (2021) shows the results that there is a relationship between stress and the frequency of gastritis recurrence with a p value = 0.002 and $r = 0.732$, meaning there is a strong relationship. Diet is related to the frequency of gastritis recurrence with a value of $p = 0.009$ and $r = 0.645$ which means there is a strong relationship, obtained using the Spearman Rank test. It is concluded that stress and diet are associated with the frequency of gastritis recurrence.

In line with the results of research by Rizkiana, Tanuwijaya and Rahmasari (2021) which concluded that eating habits and stress have a relationship with the incidence of gastritis. Irregular eating times can increase stomach acid so that it can irritate the stomach which causes gastritis. Apart from eating habits, stress factors can also affect the incidence of gastritis. This is because stress has a negative effect on the planning channel.

Furthermore, food consumption patterns that have irregularities and the habit of eating spicy, hot and sour foods can also result in dyspepsia felt by a person, because the food consumed can bring damage to the gastric mucosa and increase stomach acid which then causes feelings of pain, fullness and bloating in the upper abdomen. The results of research by Ulfa, et al (2021) show that in the type and frequency of eating, the p-value is 0.000 and $0.023 < 0.05$, so there is a significant relationship between the type and frequency of eating with the number of Suspect Dyspepsia in Jambi University Nursing undergraduate students.

3.4 Self-image

Self-image is the way a person views himself in his ability or appearance. Self-image can affect stress and eating behavior, because physical conditions cause someone to feel inferior to their physical condition and cause someone to have bad eating behavior for the purpose of changing their physical condition. Generally, this case occurs in women who feel inferior to a less than ideal body shape and like to compare their appearance with others, so they make unhealthy diet patterns. The results of research by Farida & Murdiana, (2024) concluded that there is an influence of self body shaming on eating behavior in adolescent girls in Makassar City. This means that the higher the self body shaming, the higher the eating behavior in adolescent girls. Vice versa, the lower the self body shaming, the lower the eating behavior in adolescent girls. Based on the results of Sari & Rosyidah's research, (2020) also shows that there is a positive relationship between body shaming and eating behavior. Similar research was also conducted by Rachmawati, (2023) which shows that there is a relationship between body image and eating disorders.

Furthermore, the results of Sari's research (2023) also show that there is an influence between physical self-concept and unhealthy eating behavior in young adult women with R square = 0.145 and contributes an influence of 14.5%. These results mean that the individual's physical self-concept will affect unhealthy eating behavior. When women have a negative view of their body, they will form low self-confidence, tend to be unable to accept themselves, and feel dissatisfied with their body shape.

4. Conclusion

Stress is a non-specific response from the body to the problems it receives. High levels of stress can be associated with poor eating behavior, namely eating behavior that does not prioritize health aspects, such as the habit of consuming foods that do not provide essential substances according to body needs, irregular eating patterns, and unhealthy lifestyles, so that it can affect stress and eating behavior. Several factors can affect stress and eating behavior, namely; poor sleep quality, obesity, irregular eating patterns, and self-image.

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