

Emotional Eating Among Final Year Undergraduate Female Students of Faculty of Public Health Universitas Indonesia During Covid-19 Pandemic in 2021

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Abstract

Emotional eating is defined as the tendency to excessively consuming food which often high in sugar, salt, and fat levels in response to negative emotions. Uncontrolled emotional eating will increase the risk of eating disorders such as bulimia nervosa and binge-eating disorder, obesity, cardiovascular diseases, and type II diabetes. This study aims to find out about the relationship between perceived stress, anxiety, academic stressors, social media engagement, COVID-19 infection history in respondent and their family members, and mindfulness with emotional eating among 106 final year undergraduate female students of the Faculty of Public Health Universitas Indonesia during the COVID-19 pandemic in 2021. This cross-sectional quantitative study shows that there are about 20,8% of respondents who has an emotional eating tendency. There are significant differences between social media engagement and observing facet (p -value $< 0,05$) with emotional eating. Young adults should discover more about their triggers and positive coping strategies, to use social media wisely, and to eat mindfully.

Keywords: Emotional eating, stress, social media, mindfulness, COVID-19

Abstrak

Emotional eating didefinisikan sebagai kecenderungan untuk mengonsumsi makanan yang umumnya tinggi gula, garam, dan lemak, secara berlebih, sebagai respons atas emosi negatif yang dirasakan. Emotional eating yang tidak terkontrol dapat meningkatkan risiko terjadinya perilaku makan menyimpang seperti bulimia nervosa dan binge-eating disorder, obesitas, penyakit kardiovaskuler, serta diabetes melitus tipe 2. Penelitian ini bertujuan untuk melihat hubungan antara persepsi stres, kecemasan, stresor perkuliahan, penggunaan media sosial, riwayat terkonfirmasi positif COVID-19 pada individu dan anggota keluarga, serta mindfulness dengan kejadian emotional eating pada 106 mahasiswa tingkat akhir S1 Reguler Fakultas Kesehatan Masyarakat Universitas Indonesia selama pandemi COVID-19. Penelitian ini adalah penelitian kuantitatif dengan desain studi cross-sectional. Hasil penelitian menunjukkan bahwa sebanyak 20,8% responden mengalami emotional eating. Terdapat perbedaan rata-rata skor yang signifikan antara penggunaan media sosial, dan observing facet (p -value $< 0,05$) terhadap emotional eating. Individu dapat lebih mengenali pemicu dan coping strategies yang tepat untuk mengatasi emosi negatif, menggunakan media sosial secara bijak, serta menerapkan mindful eating.

Kata kunci: Emotional eating, stress, media sosial, mindfulness, COVID-19

Introduction

Moods and emotions can influence individuals' decision making and actions, including how they tend to have certain food preferences and/or eating behaviors. Emotional eating is defined as the tendency to overeat in response to various negative emotions (1). The consumption of foods which contain high level of sugar, salt, and fat are often preferred by emotional eaters (2,3). Uncontrolled emotional eating may function as one of many maladaptive coping strategies whenever someone is in a stressful situation (4) and it may lead to weight gain (5) and furthermore having an obesity and/or central obesity. Obesity, then, increase the risk of cardiovascular diseases, type II diabetes (6), and lowers immune function (7). Uncontrolled emotional eating may contributes in developing binge eating disorder as well as bulimia nervosa (8,9).

Emotional eating cases were found in previous research among adult populations. In Australia, there were 61,9% obese respondents who were classified as emotional eaters (10). In Massachusetts, the prevalence of emotional eating was evident among 60% of respondents and 45% of them tend to overeat (11). In a study conducted among university students, there was 32% female university students in Bahrain (12); about 85,5% in DKI Jakarta (13); and specifically 48,8% final year students in Ungaran who were working on their undergraduate thesis (14); showed the tendency of emotional eating.

Due to the COVID-19 pandemic, governmental authorities have imposed a lockdown policy which may increase the risk of emotional eating. This hypothesis is substantiated by several studies about behavioral and dietary changes during pandemic, including food preferences, meal frequency, snacking frequency

between meals, and emotional eating intensity—in response to anxiety, boredom, stress, and depression caused by lockdowns (15–18). As for the factors that influence emotional eating are stress (19,20), anxiety (21), social media engagement (22,23), and mindfulness (24,25).

According to the previous study in 2020, about 17,8% female students of Faculty of Public Health Universitas Indonesia experienced emotional eating, with 89,9% of overall respondents had moderate-to-high level of perceived stress during COVID-19 pandemic (26). The lecture and thesis work—discussion system who are experiencing changes due to the COVID-19 pandemic situation in 2021 may affect the occurrence of emotional eating through the mechanism of an increase in negative emotions. Therefore, this study aims to find out about the relationship between perceived stress and other factors with emotional eating behavior among final year female students of the Faculty of Public Health Universitas Indonesia (FKM UI) who were conducting their undergraduate thesis during the COVID-19 pandemic in 2021.

Methods

This cross-sectional quantitative study was conducted online in April—May 2021 among 190 undergraduate final year female students of the Faculty of Public Health aged 18—24 who were working on their thesis. This study was divided into 2 (two) main stages: the screening stage and the main research (emotional eating) stage. The SCOFF (27) and Binge Eating Disorder Screener-7 (28) questionnaires were used to identify possible eating disorders in prospective research respondents. This research used Google Form as the survey platform.

The data of final year undergraduate

female students of Faculty of Public Health Universitas Indonesia who were working on their thesis obtained through the Academic Unit (n=249). Furthermore, 190 students agreed to participate in this research after being texted personally by the researcher. Students who were pregnant and breastfeeding, diagnosed with eating disorders (such as anorexia nervosa, bulimia nervosa, and/or binge-eating disorder), and were taking antidepressant medication within a month were not allowed to participate further in this study. 119 out of 190 passed the screening test and did not have any exclusion criteria mentioned above. Finally, by using simple random sampling, 106 respondents were selected to participate further in this study.

Emotional Eating was measured using The Dutch Eating Behavior Questionnaire (29); Perceived Stress was measured using the Perceived Stress Scale (30); academic stressor was measured using the University Stress Scale (31). The questionnaire was modified on the “academic” aspect to be more in line with the estimated stressors that might arise when students are working on their thesis (32); Anxiety level was measured using COVID-19 Anxiety Syndrome Scale (33); COVID-19 history was divided into “ever” and “never”; Social Media Engagement or Usage was measured using Social Media Engagement Questionnaire (34); and Mindfulness was measured using The Five Facet of Mindfulness Questionnaire Short Form (FFMQ-SF) (35). All variables were measured using a 0–4-point Likert Scale, except for the “COVID-19 infection history in individuals and family members”.

Descriptive statistics were used to define the proportion of responses for each variable. To assess for significant differences between each variable with

emotional eating, chi-square and independent t-test were used. All statistical analyses were performed using IBM SPSS Statistics 20.

Results

A total number of 106 respondents were included in the analysis. Table 1 shows that most respondents were students of Public Health major (40,6%), class of 2017 (98,1%), and lived in Jabodetabek area (82,1%). In this study, we found that a small proportion of female students had a tendency towards emotional eating behavior (20,8%) and had been confirmed positive for COVID-19 (7,5%). Most of the female students did not have a family member who had been confirmed positive for COVID-19 in the study period up to the last one month (77,4%), had a moderate level of perceived stress (92,5%), and considered that the category of interpersonal relationship (52,8%), resources (55,7%), academic (56,6%), living environment (55,7%), and health problems (56,6%) were the academic stressors for them. Meanwhile, the majority of respondents did not consider that discrimination (75,5%) and other problems (88,7%) outside the previous categories—were stressors for themselves. The detailed information can be seen in Table 2.

Table 3 shows average score of the anxiety level (Mean = 18), social media engagement (Mean = 21), each score of the mindfulness facet, and the total five facets of mindfulness (FFMQ) score (Mean = 32). Higher anxiety scores indicate that respondents were more likely to take preventive actions related to COVID-19 due to the worries they felt. Higher social media engagement scores indicate that the respondents used social media more frequently at certain times, such as 15 minutes before bedtime, 15 minutes after waking up, and during meals (breakfast, lunch, and

dinner). Higher FFMQ scores indicate a better level of mindfulness.

Bivariate analysis (Table 4) shows that there is no significant association between COVID-19 infection history in individuals and family members, perceived stress, and academic stressors with emotional eating in respondents during the COVID-19 pandemic (p-value > 0,05). However, the proportion of emotional eating was found higher in

respondents who were confirmed positive for COVID-19, had severe perceived stress, and considered most of the academic stressor categories to be stressors for themselves.

Interestingly, this study found out that there are significant differences between the mean score of social media engagement (p-value = 0,029) and observing facet of mindfulness (p-value = 0,032) with emotional eating).

Table 1. General Characteristics of Study Sample (n = 106)

Characteristic	n (%)
Major	
Public Health	43 (40,6)
Nutrition	25 (23,6)
Environmental Health	22 (20,8)
Occupational Health & Safety	16 (15,1)
Year of enrollment	
2016	2 (1,9)
2017	104 (98,1)
City	
Jabodetabek	86 (82,1)
Other	18 (17,9)

Table 2. Univariate Analysis of Categorical Variables

Variable	n (%)
Emotional eating	
Yes	22 (20,8)
No	84 (79,2)
Infected by COVID-19	
Ever	8 (7,5)
Never	98 (92,5)
Family member infected by COVID-19	
Ever	24 (22,6)
Never	82 (77,4)
Perceived stress	
Severe	4 (3,8)
Moderate	98 (92,5)
Low	4 (3,8)
Academic Stressors (7 aspects)	
Interpersonal relationship	
Stressor	56 (52,8)
Not Stressor	50 (47,2)
Resources/facilities	
Stressor	59 (55,7)
Not Stressor	47 (44,3)

Variable	n (%)
Academic-related	
Stressor	60 (56,6)
Not Stressor	46 (43,4)
Living environment	
Stressor	59 (55,7)
Not Stressor	47 (44,3)
Discrimination	
Stressor	26 (24,5)
Not Stressor	80 (75,5)
Health problems	
Stressor	60 (56,6)
Not Stressor	46 (43,4)
Other	
Stressor	12 (11,3)
Not Stressor	94 (88,7)

Table 3. Univariate Analysis of Numeric Variables

Variable	Mean \pm SD	Median	Min–Max	95% CI
Anxiety	18 \pm 7,449	18	2 – 34	16,57 – 19,43
Social Media Engagement	21,47 \pm 8,651	21	2 – 35	19,81 – 23,14
Mindfulness				
Observing	8,55 \pm 2,466	9	1 – 12	8,07 – 9,02
Describing	6,20 \pm 2,158	6	0 – 11	5,78 – 6,61
Acting with awareness	6,02 \pm 2,484	6	0 – 11	5,54 – 6,50
Nonjudging of inner experience	5,62 \pm 3,142	6	0 – 12	5,02 – 6,23
Nonreactivity to inner experience	6,14 \pm 2,408	6,5	0 – 12	5,68 – 6,61
Total FFMQ	32,53 \pm 6,398	32	17 – 45	31,30 – 33,76

Table 4. Factors Associated with Emotional Eating among Final Year Undergraduate Female Students in Faculty of Public Health, Universitas Indonesia

Variable	<i>Emotional Eating</i>						OR (95% CI)	<i>p-value</i>
	Yes		No		Total			
	n	%	n	%	n	%		
Infected by COVID-19								
Ever	2	25	6	75	8	100	1,300	
Never	20	20,4	78	79,6	98	100	(0,244-6,934)	0,670
Family member infected by COVID-19								
Ever	3	12,5	21	87,5	24	100	0,474	0,392
Never	19	23,2	63	76,8	82	100	(0,127-1,763)	
Perceived stress								
Severe stress	1	25	3	75	4	100	1,286	1,000
Low-to-moderate stress	21	20,6	81	79,4	102	100	(0,127-12,998)	
Academic stressor								
Interpersonal relationship								
Stressor	12	21,4	44	78,6	56	100	1,091	0,856
Not Stressor	10	20	40	80	50	100	(0,425-2,799)	

Variable	<i>Emotional Eating</i>						OR (95% CI)	<i>p-value</i>
	Yes		No		Total			
	n	%	n	%	n	%		
Resources/facilities								
Stressor	14	23,7	45	76,3	59	100	1,517	0,398
Not Stressor	8	17	39	83	47	100	(0,576-3,996)	
Academic-related								
Stressor	14	23,3	46	76,7	60	100	1,446	0,455
Not Stressor	8	17,4	38	82,6	46	100	(0,549-3,810)	
Living environment								
Stressor	14	23,7	45	76,3	59	100	1,517	0,398
Not Stressor	8	17	39	83	47	100	(0,576-3,996)	
Discrimination								
Stressor	6	23,1	20	76,9	26	100	1,200	0,737
Not Stressor	16	20	64	80	80	100	(0,414-3,478)	
Health problem								
Stressor	13	21,7	47	78,3	60	100	1,137	0,791
Not Stressor	9	19,6	37	80,4	46	100	(0,439-2,949)	
Other								
Stressor	2	16,7	10	83,3	12	100	0,740	1,000
Not Stressor	20	21,3	74	78,7	94	100	(1,152-1,412)	

Table 5. Factors Associated with Emotional Eating among Final Year Undergraduate Female Students in Faculty of Public Health, Universitas Indonesia

Variable	<i>Emotional Eating</i>	Mean	SD	Min-Max (95% CI)	<i>p-value</i>	n (106)
Anxiety	Yes	19,14	7,766	15,57–22,93	0,424	22
	No	17,70	7,382	15,87–19,29		
Social Media Engagement	Yes	25,05	7,859	21,81–28,08	0,029	22
	No	20,54	8,648	18,59–22,35		
Mindfulness						
<i>Observing</i>	Yes	9,55	2,064	8,63–10,38	0,032	22
	No	8,29	2,506	7,82–8,80		
<i>Describing</i>	Yes	6,09	2,045	5,22–6,66	0,795	22
	No	6,23	2,197	5,79–6,65		
<i>Acting with Awareness</i>	Yes	5,95	2,459	4,96–7,19	0,892	22
	No	6,04	2,505	5,55–6,66		
<i>Nonjudging (Of inner experience)</i>	Yes	6,00	3,207	4,75–7,48	0,529	22
	No	5,52	3,137	4,86–6,23		
<i>Nonreactivity (To inner experience)</i>	Yes	6,27	2,051	5,57–7,13	0,776	22
	No	6,11	2,503	5,54–6,71		
Total FFMQ	Yes	33,86	6,999	31,37–38,11	0,274	22
	No	32,18	6,229	31,16–33,58		

Discussion

In this study, the term “emotional eating” focused on the tendency to eat as a coping strategy toward various negative emotions. The prevalence of current emotional eaters in FKM UI is higher than several previous studies conducted in the same location, which were 17,8% (26) and 15% (36). The higher level of emotional eating could be associated with the COVID-19 pandemic situation, which limits social interaction and face-to-face communication between individuals. This can lead to increased stress, anxiety, and other mental health problems which may further increase the risk of emotional eating (21,37).

Although there was no significant association between perceived stress and academic stressor with emotional eating tendency, this study result shows that emotional eating is more likely to be happened among respondents with severe level of perceived stress and those who considered interpersonal relationship, resources, living environment, health, and academic problems as their stressors. In relation to the ‘academic’ problems, thesis writing is also known to be one of the daily hassles that may increase stress levels in individuals (32). While a higher level of daily hassles is also associated with a higher intake of unhealthy snacking (38).

This study shows that emotional eaters had higher average anxiety scores. High levels of anxiety are known to trigger emotional eating, especially in the phenomenon of cravings for sweet or fatty foods (21,39). The COVID-19 pandemic situation is also known to be one of the contributors to high levels of anxiety, especially if individuals have excessive worries about their health (21,40).

In line with several previous studies, the proportion of emotional eating is

more common in individuals who have been confirmed positive for COVID-19. Emotional eating occurs when stress levels increase in those who undertake mandatory quarantine/isolation after their COVID-19 test result is positive (17,41). Chronic stress experienced during the COVID-19 pandemic might trigger hypothalamic-pituitary-adrenal axis (HPA axis) dysregulation, which causes hyperphagia through the food craving mechanism due to repeated triggers/stressors (2,39).

Meanwhile, respondents whose family members had been confirmed positive for COVID-19 were less likely to experience emotional eating (12.5%). The self-isolation protocol for close contacts that must be applied if there are family members who are infected can limit mobilization outside the home. Since eating out with friends or family is one of the contributing factors in emotional eating (42), behavioral changes that limit their mobilization for eating out, changes in preferences for healthier foods such as vegetables and fruits, and are less ordering fast food during pandemic (43) might contribute to lower the incidence of emotional eating. Previous study also stated that individuals who live with family members have a lower risk of experiencing emotional eating (44).

This study found that there was a significant difference in the average score of social media engagement on emotional eating. In line with previous study, excessive usage of social media during COVID-19 may lead to an increase in trauma, stress, anxiety, and depression, especially after searching for COVID-19-related information through the internet (23). The possible explanation is the probability of overloading access to discriminatory news, conspiracy theories, and infodemics, with some potential for

misinformation, disinformation, and hoaxes from social media (45). Moreover, excessive social media usage is linked to the lowering of subjective wellbeing, life satisfaction, and self-esteem levels. This also affects the onset of body image disturbances that may increase the risk of anxiety, including physical appearance anxiety (46). In this case, women tend to compare themselves to others (47). A better life satisfaction level allows individuals to have a better relationship with foods, which tends to have healthier eating styles/habit and a mindset about the importance of food for their health (48).

This study also focused on how often respondents use their social media during meals (breakfast, lunch, and dinner). Emotional eaters had higher social media engagement scores indicating the practice of 'mindless eating' is still being applied. Overconsumption can occur in individuals with 'mindless eating' practices caused by a low awareness when they eat (49). The use of social media that intentionally or unintentionally accesses recommendations or reviews about hyperpalatable foods is known to influence food choice or food preference (50). In consonance with this variable, only the 'observing' facet of mindfulness was significantly associated with emotional eating. A possible explanation is that higher observing scores indicate better sensitivity to sounds, smells, and visual elements (51). This could be attributed to the phenomenon of external eating as a moderator between higher stress and snacking (52) caused by ease of access to hyperpalatable food and the influence of food visualization in social media advertisements (53) as a result of more frequent social media engagement among emotional eaters in this study. On the other hand, higher observing scores

were associated with higher social anxiety levels (25). The phenomenon of hypersensitivity or attention bias effect that often occurs in individuals with anxiety disorders is also associated with observing facets (54). While anxiety is closely related to emotional eating (21,39).

In this study, emotional eaters tended to have lower scores in 'describing' and 'acting with awareness' facets of mindfulness which indicate a higher likelihood of impulsive behavior in consuming food; in other words eating impulsively (55). A greater score of mindfulness can be associated with lower consumption of foods high in fat and sugar, being able to be more aware, and also more in control of thoughts, feelings, and actions that are being or are about to be performed (56,57). The implementation of mindfulness through mindful eating techniques can minimize the emergence of emotional eating (5,19).

The usage of eating disorders screeners was a strength of this study, although there were some limitations. Online survey allows for discrepancies in the answers given by the respondents due to misalignment of understanding with the researcher, mood changes, level of self-knowledge, multitasking while filling the questions, and the level respondents' honesty due to being asked for detailed data such as their full names (not anonymous). However, the researcher has mitigated these issues by including informed consent, providing the explanations about the questions at the beginning of each section of the questionnaire, formatting the Google Form so that each "required" question item is filled in, and did multiple follow up if incomplete questionnaires are found.

In terms of substance, the researcher also did not study further about the types

of coping strategies used by the respondents (apart from emotional eating). Variations in coping strategies can be one of the reasons why perception of stress, anxiety levels, and academic stressors (as components of negative emotions) did not have a significant relationship with emotional eating.

Conclusion

According to the present study, there are about 20,8% of respondents which are female students of Faculty of Public Health Universitas Indonesia who has an emotional eating tendency. Social media engagement and the observing facet of mindfulness were significantly associated with emotional eating. Although perceived stress, academic stressor, and anxiety were not significantly associated with emotional eating among respondents, young adults are suggested to pay more attention to the types of stressors that might trigger an increase in their stress and anxiety levels. Young adults should discover more about the positive coping strategies that work best for themselves, to use social media wisely in terms of frequency—intensity—the quality of information, and to perform good time management. Adopting mindful eating practices is also known to help improve our mental health and prevent emotional eating. Future studies on emotional eating which discusses more about respondents' coping strategies and types of food they often consume during the emotional eating period, as well as involving body image and positive emotion variables can be several alternatives in navigating emotional eating to prevent obesity and its consequences.

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