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EMOTIONAL EATING AND EMOTIONAL REGULATION OF UNDERGRADUATE STUDENTS DURING LOCKDOWN

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Abstract

The current study was conducted among undergraduate students in order to understand their emotional eating and emotional regulation. Emotional eating is an increase in food intake to cope with negative emotions. Emotional regulation concerns how people manage the emotional experience for personal and social purposes. This study aims to investigate emotional eating and regulation of undergraduates belonging to a different gender, area of residence and mode of food ordering. The study contains a sample of 110 students. 70 girls and 40 boys took part in the study. The required data were collected through a self-report questionnaire, Salzburg Emotional Eating Scale and Emotional Regulation Questionnaire. The data were analyzed by using different statistical tools such as independent t-test and Pearson correlation. The result of the t-test showed no significant difference between urban and rural students and the students who order online and those who do not. On the other hand, a significant difference was depicted in emotional regulation among male and female students. Moreover, there was a significant difference in the expressive suppression of male and female students. The Pearson correlation shows a positive correlation between emotional eating and emotional regulation. The present study reveals the need for a better emotional regulation strategy rather than the use of emotional eating among young adults, especially during the pandemic that surges negative emotions, leading to emotional eating.

Keywords:

Emotional eating;
Emotional regulation.

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1. Introduction

Human beings are rational beings while doing or displaying behaviour, they make use of their rational thoughts, reasons and applies logic in doing whatever they are motivated to do. But at the same time, man is also an emotional being. Emotions are often confused with feelings and moods, but the three terms are not interchangeable. According to the American Psychological Association (APA), emotion is defined as "a complex reaction pattern, involving experiential, behavioural and physiological elements." Emotions are how individuals deal with matters or situations they find personally significant. Emotional experiences have three components: a subjective experience, a physiological response and a behavioural or expressive response. Feelings arise from an emotional experience. Because a person is conscious of the experience, this is classified in the same category as hunger or pain. A feeling is the result of an emotion and may be influenced by memories, beliefs and other factors. A mood is described by the APA as "any short-lived emotional state, usually of low intensity." Moods differ from emotions because they lack stimuli and have no clear starting

point.In the present world, students worldwide in addition to daily hurdles of life, are struggling due to the pandemic, social distancing, academic pressures and parental expectations. The novel coronavirus disease (COVID-19) first appeared in Wuhan city of China at the end of 2019. Rapid worldwide spreading of COVID-19 prompted the World Health Organization (WHO) to declare it as a 'pandemic' on 11 March 2020. Most governments around the world have initiated a common goal to control the spread of this highly contagious disease by imposing lockdown, social/physical distancing, avoiding face-to-face teaching-learning, and restrictions on immigration. Around 600 million school-going learners are affected across the world due to the closing down of educational institutions. The effect of this lockdown is worst for the mental health of a student, as they are unable to meet their peer group physically, especially during a condition where they would need emotional support. They are unable to enjoy what they used to do in pre-COVID days. These difficulties are likely to cause psychological problems within the student population. They are most likely to go through emotional distress. Many students may turn to online surfing or games leading to internet addiction. Many of the students tend to turn to food for comfort, stress relief, and they tend to reach for junk food, sweets, and other comforting but unhealthy foods which may lead to several health issues like obesity.

Emotional eating

Emotional eating is often defined as an increase in food intake in order to cope with negative emotions (Macht and Simons, 2011) also, Emotional eating is defined as eating in response to an emotional state rather than to hunger cues (Geliebter& Aversa, 2003). This type of eating style characterizes several eating-related psychopathologies. For example, negative affect precipitates binge eating episodes in individuals with bulimia nervosa and binge eating disorder (Haedt-Matt and Keel, 2011) and increases the desire to eat in obese individuals (van Strien et al., 2016). Although food intake is often used as an emotion regulation strategy, it usually does not reduce negative affect effectively and, thus, the mechanisms that generate and maintain emotional eating are far from being clear (Haedt-Matt et al., 2014). Moreover, it seems that numerous moderators determine the effects of emotions on eating behaviour such as the arousal level that accompanies certain emotions or individual differences in eating habits (Macht, 2008). While the majority of studies on emotional eating have focused on eating to alleviate a negative mood, it has been shown that a positive mood can also result in increased food intake (Cardi et al., 2015). Moreover, while most research has focused on increased food intake, it has been found that experiencing emotions can also result in a decrease in food intake, depending on self-reported emotional eating tendencies (van Strien et al., 2012). However, others have conceptualized emotional eating as a means to regulate affect (Kaplan & Kaplan, 1957). Research has found that negative emotional states have been linked to poorer dietary patterns (Gibson, 2006); these diets are in turn linked to poor health outcomes (Hermansen, 2000; (van Dam, Grievink, Ocke, &Feskens, 2003). Therefore, eating in response to negative emotions may have deleterious effects on health over time. Emotional eating is using food to make a person better emotionally- they usually fill emotional needs and not hunger cues. Unfortunately, emotional eating does not solve emotional problems.

The emotional eating theory states that negative emotions can induce eating because eating has the capacity to scale back their intensity. It is observed that emotional eating is quite common among adults, but the amount of food they consume varies from individual to individual. The causes of these differences are underexplored and there is also no clear evidence yet on the origin of this kind of eating. Theories point out a connection between mood and food in early childhood, cultural influences and specific biological factors like taste sensitivity were also found to play major roles (Canetti, L., Bacher, E., & Berry, E. M.2002). A little more is known about the underlying mechanisms. During ingestion, food can elicit strong hedonic responses that improve emotional state, and after ingestion, nutrients may affect neurochemical and endocrine systems linked to emotions. The initiation of these psychological and physiological mechanisms is depending on the degree of the persons emotional eating (Herman, C. P., &Polivy, J.1975).

Emotional Regulation

Emotional regulation refers to the ability to effectively exert control over one's emotions through a wide range of strategies to influence which emotions one has, experiences, or expresses (Gross, 2001). Emotional regulation concerns how people manage the emotional experience for personal and social purposes. It is a complex and multifaceted process and is developmentally important because it is central to social competence, psychological wellbeing, and risk for affective psychopathology. The development of emotion regulation is based on early neurobiological growth, shaped by temperamental individuality, and guided by the young child's conceptual understanding of emotion, strategies of emotion management, and the self. It is also guided by social influences: parental coaching, modelling, direct interventions, conversation, the quality of the parent-child relationship, and the unique influences of peers and siblings. The most forward-thinking families of strategies, situation selection and modification, entail efforts to influence the kinds of situations that one will experience or to modify relevant features of those situations once they are in them.

Next, attention deployment involves directing attention toward or away from features of a given situation, as when distracting oneself. After that, cognitive change strategies target our appraisals, changing the ways we think about an attended stimulus to change its emotional impact. The prototypical cognitive change strategy, reappraisal, involves deliberately changing one's interpretation of and/or personal connection to a stimulus. Finally, response modulation strategies target and modulate the behavioural component of the emotional response, for example, emotional facial expressions (Gyurak, Gross, &Etkin, 2011). People unconsciously use emotion regulation strategies to deal with difficult situations repeatedly throughout every day. Most use a variety of emotion regulation strategies and can apply them to different situations to adapt to the demands of the environment. Some of these are healthy, some are not. Healthy coping strategies like Yoga and Mindfulness meditation do not cause harm. They can help to dilute strong emotions, often allows an understanding of what made the emotion to occur. Self-injury and overeating are considered unhealthy coping strategies. Unhealthy strategies are those that may leave lasting damage (such as lifetime scars, chronic injuries or wounds, health issues), result in unanticipated damage (such as wounding too deeply, obesity), or lead to avoiding dealing with situations that will inevitably require a head-on solution (drugs or alcohol are common here but self-injury can be used as a "distraction" for this reason too).

Emotional eating has been associated with various indicators of psychopathology including symptoms of anxiety and depression, body dissatisfaction, feelings of physical incompetence, difficulties in interpersonal relationships, overeating, and bulimic behaviours (Wardle et al.,1992). There is also well-established literature documenting the relationship of emotion regulation to psychopathology. Poor emotion regulation strategies have been linked with externalizing symptoms (Gardner, Dishion, & Connell, 2008) and internalizing symptoms (Schultz, Izard, Ackerman, &Youngstrom, 2001) in childhood. As both emotional eating and emotion regulation are linked with symptoms of psychopathology, working on emotional eating can be conceptualized as a strategy to regulate emotion.

A major study byFlaudias and colleagues on "COVID-19 pandemic lockdown and problematic eating behaviours in a student population" (2021) found that stress related to the lockdown was associated with a greater likelihood of binge eating and dietary restriction over the past week and intentions to binge eat and restrict over the next 15 days. Greater exposure to COVID-19-related media was associated with increased eating restriction over the past week. Binge eating and restriction were associated with established risk factors, including female gender, low impulse regulation, high body dissatisfaction, and having a concurrent probable eating disorder. It was found that the higher the stress related to the first week of confinement, the higher the risk of problematic eating behaviours among students, particularly those characterized by eating-related concerns. As the indicates, the stress related to lockdown was correlated with likelihood of emotional eating causing obesity, this makes it important to study on this area of psychology as it helps in understanding whether better emotional regulational techniques help in reducing the chance for emotional eating on exposure to stressful events and if not to introduce better strategies and life skills for students.

2. Research Method

Studies conducted on emotional eating and emotional regulation (Vandewalle, Moens &Braet (2013), Crockett, Myhre, Rokke (2015), Taube-Schiff, Exan, Tanaka, Wnuk, Hawa, Sockalingam (2015), Tan, PhD, Holub (2015), Vandewalle, Moens, Beyers &Braet (2016), Meule, Richard, Schnepper, Reichenberger, Georgii, Naab, Voderholzer&Blechert (2019), Juarascio, Parker, Manasse, Barney, Wyckoff, and Dochat (2020), Barnhart, Braden, Price (2020), Echeverri-Alvarado, Pickett, Gildner (2020), Flaudias et al (2021)) reflect the theoretical and practical importance of the present study.

The study aimed at finding the emotional eating and emotional regulation of college students. It broadly investigates the difference of the variables with respect to gender, area of residence and on the basis of whether or not they order food online. A sample size of 110 was selected through convenient sampling. The sample includes 70 girls and 40 boys. The individuals included are students belonging to the age group of 18-23 years, pursuing college-level education. The area of sampling is the Thrissur district of the state of Kerala in India. The measures include a personal data sheet collecting information about age, gender, area of residence, questions on online and non-online food ordering, Salzburg Emotional Eating Scale, Emotional Regulation Questionnaire.

All participants completed an online survey.Each questionnaire was converted to an online version via google forms. The google forms were propagated through online means. Each participant was presented with a brief description of the study and asked about their willingness to participate, also were informed that they could leave the study whenever they wish to. Participants were also assured about the confidentiality of their responses.Taking account of the current pandemic situation the samples were asked to share the form with other people they know in the same age group.The Student's t-test and Pearsons correlation is tested using SPSS as a statistical analysis for the study. Independent t test is a statistical test appropriate for judging the significance of difference between means of two samples (Garette, 1969). The t-test is based on t distributions. If the calculated' value exceeds the cut-off point (depending on the degrees of freedom) the

difference between means is considered significant. When the t-value is below the critical value, the difference is not significant. Correlation is a statistical tool to find the strength and direction of the relationship between two quantitative variables. When two variables move in such a manner that change in one variable is followed by the change in the other variable, we say that they are correlated.The coefficient of correlation proposed by Karl Pearson measures the direction and magnitude of the linear relation between two continuous variables x and y. Here, the significant difference between the mean of male and female, urban and rural students online and non-online consumers are tested. Similarly, significant correlation between urban and rural area are also tested.

3. Results and Analysis

The pandemic-imposed lockdown has produced many significant lifestyles changes among the people. While considering the students' population, who has been impacted the most by the lockdown, has gone through difficult times during the past 2 years. The effect of lockdown was the worst for the mental health of a student, as they are unable to meet their peer group physically especially during such a condition where they would need emotional support. They are unable to enjoy what they used to do in pre-COVID days. Students have turned to many unhealthy habits to suffice their idleness, many students have chosen internet surfing and gaming as an escape, which possibly cause internet addiction. Many have turned to fast foods for comfort from negative feeling, mainly fear caused by the virus and irritability caused by the lockdowns. The study intends to see if students use emotional eating as an emotional regulation technique. This study focuses on the changes that have happened to the students' emotional eating and their emotional regulation capacities.

The significant observations from the analyses are substantiated and illustrated below.

Table 1: Mean, standard deviation and t values of emotional regulation and emotional eating with regard to gender

VARIABLES	MALE (N= 41)		FEMALE (N= 70)		t VALUES
	Mean	S. D	Mean	S. D	
HAPPINESS	16.18	1.904	15.77	2.945	0.779
SADNESS	13.41	4.772	12.41	4.927	1.023
ANGER	12.15	3.977	11.84	3.999	0.390
ANXIETY	11.72	4.065	10.84	5.132	0.916
COGNITIVE REAPPRAISAL	30.64	6.351	29.01	6.595	1.251
EXPRESSIVE SUPPRESSION	18.95	3.913	16.79	4.093	2.686*

*P<0.01

Table 1 shows the mean, standard deviation, and t values of male and female students with respect to the variables; emotional eating and emotional regulation.

The mean of male students in happiness is 16.18(SD =1.904) and that of female students is 15.77(SD =2.945). The t value of happiness is 0.779. The values portray that there is no significant difference between male and female students concerning the happiness component of emotional eating.

The mean of male students in sadness is 13.41(SD =4.772) and that of female students is 12.41(4.927). The t value of sadness is 1.023. The values portray that there is no significant between male and female students with regard to the sadness component of emotional eating.

The mean of male students in anger is 12.15(SD=3.977) and that of females is 11.84(SD=3.999). The t value of anger is 0.390. The values indicate that there is no significant difference between male and female students concerning the anger component of emotional eating. The mean of male students in anxiety is 11.72(SD=4.065) and that of females is 10.84(SD=5.132). The t value of anxiety is -0.916. The values show that there is no significant difference between male and female students with regard to the anxiety component of emotional eating.

The mean of male students in cognitive reappraisal is 30.64 (SD=6.351) and that of females is 29.01(SD=6.595). The t value of cognitive reappraisal is 1.251. The values do not show any significant difference between the male and female students concerning the cognitive reappraisal component of emotional regulation. The mean of male students in expressive suppression is 18.95(SD=3.913) and that of

females is 16.79(SD=4.093). The t value of expressive suppression is 2.686. Here the difference was found to be significant.

The analyses portray that there is a significant difference in expressive suppression (emotional regulation) between male and female students. This may be because of the gender role stereotypes imposed by society, which restricts men and women from using different emotional regulation strategies other than what society expects them to do. Another reason for the gender difference can be seen from a study by McRae. In McRae's study, (2008) he recorded participants' brain activity during the completion of an emotion regulation reappraisal task, which required participants to use a cognitive reappraisal strategy to "decrease" their emotional responses to negative emotional stimuli. Men revealed reduced amygdala activity during emotion regulation to negative emotional stimuli compared to women, suggesting a greater capacity to regulate negative emotional responses.

In contrast, Domes, (2010) examined brain activity during a reappraisal emotional response to negative stimuli. Men were found to have greater activation in prefrontal regions than women, with no sex differences in amygdala activity, when regulating emotional responses to negative stimuli. Domes concluded that men may not have the more efficient emotion regulation processing system as claimed by McRae (2008). On the whole, it was found that there is no gender difference in emotional eating contradictory to previous studies because most of the studies failed to obtain the same results as before to show the reliability of the findings. In several studies, sex differences were indeed found, with female children and adolescents reporting higher levels of emotional eating than male adolescents, but almost the same number of studies failed to find any sex differences in emotional eating.

Table 2: Mean, standard deviation and t values of emotional regulation and emotional eating with regard to the area of residence.

VARIABLES	URBAN (N= 49)		RURAL (N= 62)		t VALUES
	Mean	S. D	Mean	S. D	
HAPPINESS	15.51	1.721	16.25	3.118	1.480
SADNESS	13.27	5.053	12.49	4.788	0.822
ANGER	12.06	4.023	11.90	3.944	0.209
ANXIETY	11.67	4.483	10.84	5.024	0.911
COGNITIVE REAPPRAISAL	29.37	6.576	29.92	6.566	0.437
EXPRESSIVE SUPPRESSION	17.63	3.930	17.52	4.311	0.136

Table 2 shows the mean, standard deviation, and t values of students living in urban and rural areas concerning the variables emotional eating and emotional regulation.

The mean of students living in the urban area in happiness is 15.51(SD =1.721) and that of students living in rural conditions is 16.25(SD =3.118). The t value of happiness is 1.480. The mean of students living in the urban area in sadness is 13.27(SD =5.053) and that of students living in the rural area is 12.49(4.788). The t value of sadness is 0.822. The mean of students living in the urban area in anger is 12.06(SD=4.023) and that of students living in the rural area is 11.90(SD=3.944). The t value of anger is 0.209. The mean of students living in the urban area in anxiety is 11.67(SD=4.483) and that of students of the rural area is 10.84(SD=5.024). The t value of anxiety is 0.911. The mean of students of urban area in cognitive reappraisal is 29.37 (SD=6.576) and that of students from a rural area is 29.92(SD=6.566). The t value of cognitive reappraisal is 0.437. The mean number of students living in the urban area in expressive suppression is 17.63 (SD=3.930) and that of students in the rural area is 17.52 (SD=4.311). The t value of expressive suppression is 0.136.

No statistically significant difference was found among urban and rural students with regard to emotional eating and emotional regulation. This is due to urbanization. The fine line that used to differentiate rural from the urban area has now been blurred within the past few years. Now both the urban and rural areas have access to smartphones, internet access, fast food centres, online food delivery apps and orders could reach everywhere. Moreover, the pandemic has forced at least some of underdeveloped areas into development. Some studies point out the effect of urbanization on the living standards of the general population. Gorrell's

(2019) investigation related to the impact of urbanization on eating pathology highlights specific risk factors for eating disorders, including acculturation to Western standards of beauty, and food resources with associated body weight and body image concern. This indicates that there is no significant between emotional eating and emotional regulation between students of urban and rural areas of residence due to the urbanization in both areas.

Table 3: Mean, standard deviation and t values of emotional eating and emotional regulation with regard to online food ordering.

VARIABLES	DON'T ORDER ONLINE (N= 55)		ORDERS ONLINE (N= 55)		t VALUES
	Mean	S. D	Mean	S. D	
HAPPINESS	15.75	2.459	16.09	2.757	0.693
SADNESS	12.49	4.558	13.18	5.239	0.738
ANGER	11.73	3.8991	12.22	4.045	0.648
ANXIETY	10.62	5.166	11.80	4.344	1.299
COGNITIVE REAPPRAISAL	28.64	6.859	30.71	6.103	1.674
EXPRESSIVE SUPPRESSION	17.29	4.263	17.85	4.007	0.715

Table 3 shows the mean, standard deviation, and t values of students who use and who don't use online delivery apps to order food concerning the variables; emotional regulation and emotional eating. The mean of students who order online in happiness is 15.75(SD =2.459) and that of students who don't order online is 16.09(SD =2.757). The t value of happiness is 0.693. The mean of students orders online in sadness is 12.49(SD =4.558) and that of students who don't order online is 13.18(5.239). The t value of sadness is 0.738. The mean of students who order online in anger is 11.73(SD=3.8991) and that of students who don't order is 12.22(SD=4.045). The t value of anger is 0.648. The mean of students who order online in anxiety is 10.62(SD=5.166) and that of students who don't order online is 11.80 (SD=.4.344). The t value of anxiety is 1.299. The mean of students who order online in cognitive reappraisal is 28.64 (SD=6.859) and that of students who don't order online is 30.71(SD=6.103). The t value of cognitive reappraisal is 1.674. The mean students who order food online in expressive suppression is 17.29 (SD=4.263) and that of students who don't order online is 17.85 (SD=4.007). The t value of expressive suppression is 0.715.

From the values, it is clear that there is no significant difference between emotional eating and emotional regulation of students who order food online and those students who don't order food online. But it was found from the sample response that, almost 50.5% of the participants ordered food online and among them, almost 53.2% responded that they indeed found that their online ordering habit had increased during the lockdown when compared to pre-covid days. Some studies point out the possible reasons for this change. Swetha. (2020). gave evidence regarding online food consumers have a shallow incidence of activation control concerning non-online food consumers. This could be because online food consumers are always exposed to various distractions, especially online. This might have helped them in distracting themselves through emotional eating from the unfavourable information available about coronavirus and uncertainties about their future. A piece of contradictory evidence suggests that activity is not related to eating behaviour (Haycraft, Farrow, Meyer, Powell &Blissett, 2011). So, there is a chance that eating behaviour can decrease the activation control (activity) of an individual. Moreover, the interview schedule suggests that most of the online food consumers order junk food. This provides evidence that online users use emotional eating as a coping strategy in decreasing their activation control, to help them keep on engaging in eating, which helps them to escape from the fear and uncertainty caused by the pandemic and lockdown.

Table 4: Correlation coefficient of variables such Emotional eating (Happiness, Sadness, Anxiety, Anger) and emotional regulation (Cognitive reappraisal, and Expressive suppression)

VARIABLES	COGNITIVE REAPPRAISAL	EXPRESSIVE SUPPRESSION
HAPPINESS	0.288*	0.103
SADNESS	0.054	0.059
ANGER	0.063	-0.006
ANXIETY	0.126	0.157

*P<0.01

Table 4 shows the correlation of variables such as emotional regulation (Cognitive reappraisal, and Expressive suppression) and emotional eating (Happiness, Sadness, Anxiety, Anger). According to the table, Happiness has positively correlated with cognitive reappraisal, which indicates there is a significant association between cognitive reappraisal and happiness.

As the sign indicates, there is a positive correlation between cognitive reappraisal and happiness, which means that, as happiness increases so does cognitive reappraisal. Cognitive appraisal is the subjective interpretation made by an individual to stimuli in the environment. Thereby it gives us evidence that practising emotional eating in a happy mood leads to emotional regulation as cognitive reappraisal is found to be one of the most effective techniques of emotional regulation. Happiness has also correlated positively with expressive suppression, but there is no significant association between happiness and expressive suppression, this may be because individuals find it difficult to suppress their emotions when they are in a happy mood.

In the case of the sadness component of emotional eating, it has positively correlated with cognitive reappraisal and expressive suppression but neither are significantly related. A possible reason for this may be, individual may find it difficult to reframe the stimuli and experience and also finds it difficult to suppress their sadness while going through highly stressful and melancholy circumstances.

While considering anger component of emotional eating, it has positively correlated with cognitive reappraisal and negatively correlated with expressive suppression, but neither are significantly associated with anger. One of the reasons for this maybe, anger rumination may decrease the individual's capacity to reframe the stimulus or the situation to a better point of view. Emotional outbursts may also prevent the person from expressive suppression, which results in anger outbursts and taking the anger out on another person physically and verbally.

In the case of anxiety component of emotional eating, it has positively correlated with both cognitive reappraisal and emotional suppression, but neither are significantly related. In severe anxiety provoking situations, the individual may not be able to completely reform the situation or the stimulus to engage in cognitive reappraisal and may also find it difficult to supress their anxiety in a pervasive presentation of anxiety.

4. Conclusion

It can be concluded that there exists a positive correlation between emotional regulation and emotional eating. And that, students do use emotional eating as an emotional regulational strategy. Emotional regulation was found to be effective when the individual was engaged in emotional eating during happy mood rather than any other moods. Cognitive reappraisal technique was found to be effective when considering the happy mood of the individual rather than expressive suppression method. The study found no significant difference between urban & rural areas of residence of students and between students who ordered food online & those students who did not, with regard to emotional regulation and emotional eating. But it was portrayed that there is a significant difference between the male and female students with respect to the variables; emotional eating and emotional regulation. So, it can be understood that areas of residence and whether students ordered food online or not has no effect on the emotional regulation and emotional eating. Moreover, gender has a significant influence on the emotional eating and emotional regulation of the student population.

The study uncovers a need for a better emotional regulational technique rather than unhealthy emotional eating which promots obesity in students that has many adverse effects on health. The result urge for intervention strategies at early life due to the evidences found in reviews that agree that certain parental techniques can effect kind of emotional regulation technique the child will use admist a stressful situation.
Emotional regulation was found to be effective when the individual was engaged in emotional eating during happy mood rather than any other moods. Cognitive reappraisal technique was found to be effective when considering the happy mood of the individual rather than expressive suppression method. The study found no significant difference between urban & rural areas of residence of students and between students who ordered food online & those students who did not, with regard to emotional regulation and emotional eating. But it was portrayed that there is a significant difference between the male and female students with respect to the variables; emotional eating and emotional regulation. So, it can be understood that areas of residence and whether students ordered food online or not has no effect on the emotional regulation and emotional eating. Moreover, gender has a significant influence on the emotional eating and emotional regulation of the student population.

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