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Eating Habits of University Students during Covid-19 Pandemic

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Abstract:

Context: COVID-19 pandemic had an impact on student's mental health due to closure of colleges causing sudden changes, through home-isolation and social-distancing which led to changes in the lifestyle and eating behaviour. **Aim:** This study investigates eating habits of university students during covid-19 pandemic in Hyderabad. Specifically, it investigated perceived changes in eating behaviour compared to usual before COVID-19 and compared it with self-reported response during the same period. **Methods & Materials:** university students between 17-27 years residing in Hyderabad filled an online survey which included questions about socio-demographic, Anthropometric information, nutritional information, pandemic specific questions and emotional eating scale. Data were analysed using SPSS version 26.0. **Results:** it was revealed that 52.1%, 41.2% and 6.6% were low, moderate and high Emotional Eaters respectively. Association between BMI and emotions like happy, sad, nervous and under-pressure was significant ($p < 0.05$). About 51.4% respondents reported an increase in weight during pandemic. There was no correlation between perceived weight change and emotional eating. Association between physical activity and negative emotions like sad, depressed, angry and frustrated was significant ($p < 0.05$). BMI, physical activity, changes in number of meals are associated with Emotional Eating. **Conclusion:** it is evident certain emotions do have effect on the eating habits of students but it cannot confirm that weight status is influenced by EE. Future research in this area may add up to the acquired results..

Keywords: Emotional eating, Energy intake, COVID-19, BMI, dietary habits, physical activity, pandemic, College students.

INTRODUCTION

Nutrition plays a crucial part in our everyday life; it not only makes us healthy but also brings individuals together to socialise over food and sometimes it can be used in times of stress as a

coping mechanism leading to emotional eating. Emotional eating has been defined as a behavioural pattern of eating in response to negative emotions (e.g., stress, anger, depression) and sometimes even positive emotions (e.g., happy, excited). Eating might occur due to nutritive and non-nutritive cues.[1-6] during the pandemic, increased time at home provoked additional eating in response to non-nutritive cues. There is reason to believe that the pandemic has an impression on the eating habits not only thanks to the sensible effects of the lockdown, but also through its effect on perceived stress and psychological well-being. Especially students have had changes in their daily routine including lack of physical activity; disturbed sleeping patterns, virtual distractions and social distancing that have affected the mental wellbeing. Besides these factors, social isolation, fear of COVID-19, anxiety, feelings of loneliness, and boredom, have shown to influence eating behaviour. One of the key risk factors for weight gain that may be affected by confinement measures is unhealthy eating habits like Snacking between traditional meals.[7-19]

The objectives were to determine the BMI, to explore perceived changes in eating behaviour and compare it to usual before COVID-19 and to determine the relationship between emotional eating and weight status of students. Hence, the present research assessed the association between weight status and emotional eating in university students during the COVID-19 pandemic.

MATERIALS AND METHODS

2.1. Study design and rationale

A web-based cross-sectional study was conducted on the students to assess the influence of emotional eating on weight status during covid-19 pandemic using online survey via google form based on a self-designed, structured questionnaire. Online survey method was particularly beneficial in this time of emergency.

2.2. Place of study

This study was a rapid, large cross-sectional online survey conducted during the lockdown phase (28th April 2021 and 17th June., 2021) across Hyderabad in India.

2.3. Study participants

A total of 220 responses were collected using the Google Form link after excluding responses that were younger and older participants (age <17 and >27 years), duplicates and invalid entries, non-residents of Hyderabad and people who were not students. The final data included 211 participants.

2.3. Survey questionnaire

The electronic survey questionnaire was designed to assess changes in dietary habits and weight status due to emotions during the COVID-19 outbreak. The questionnaire had four sections assessing socio-demographic details, changes in diet due to emotion and COVID-19 specific questions for the changes in their behaviours.

Section A comprises of questions relating to socio-demographic data, self-reported anthropometric data and one question on perceived change in weight status during COVID-19. The demographic data on each surveyed individual included age, gender, place of living (Hyderabad or other), level of education (UG or PG), job, living with during the pandemic and BMI (calculated from reported weight and height).

Body mass index (BMI): Participants gave self-reported their height and weight which was used to calculate the BMI.

Calculation and classification of BMI

Body mass index is calculated as weight (w) in kilograms divided by square of height (h) in metres. The unit is kg/m2

BMI=w/h2

Classification

According to Asian standard BMI is classified as underweight, normal weight, overweight, and obese. The classification is shown below in table 1:

Table 1 BMI classification for Asian population

BMI	***Category***
<18.5	*Underweight*
18.5- 22.9	*Normal weight*
23-26.9	*Overweight*
>27.0	*Obese*

Section B consists of questions related to emotions and Emotional eating scale which included different Questions (e.g., Does your emotions affect the way you eat, Can the number on weighing scale change your mood) which had yes/no options.[20-22]

Emotional eating scale (EES)

The EES (Arnow et al., 1995)[20] is a 25-item scale with three factor analytically derived subscales: anger, anxiety and depression. For this survey, only 15-item scale was used which also included positive emotions like happy, excited and relaxed this was a modification to the original EES by arnow. Participants rate the extent to which certain feelings lead to the urge to eat by employing a 5-point Likert scale ranging from "no desire to eat" to "an overwhelming urge to eat." (0 for no prediction). Scores range from 0-25, 26-46, 47-100. Participants were classified as low emotional eaters if their score was < 25, and classified as high emotional eaters if they score was > 47.

Classification of scoring

Emotional Eating Scale scores were classified as low, moderate, high. Scores ranged from 0-100. Higher score represents high emotional eaters followed by moderate and low.

The classification is as shown in the table 2. [8]

Table 2 Emotional Eating score classification

SCORE	*CLASSIFICATION*
≤25	*Low*
26-46	*Moderate*
≥47	*High*

Section C consists of COVID-19 pandemic related questions and **Section D** consisted of dietary information such as eating habits, physical activity during the pandemic. The dietary information included meals/day, snacks/day, water consumption, fast food consumption/week, increase or decrease in consumption of food groups during the pandemic and food avoided compared to before the pandemic was asked to rate on a 5-point scale (strongly agree to strongly disagree). The domain on physical activity pattern includes questions like whether the participants exercised before and during the pandemic with the frequency per week and if they started exercising during the pandemic or to overcome emotions.

2.4. Data and statistical analysis

The data collected was statistically analysed using statistical measures such as percentage, frequency, mean and standard deviation. Descriptive statistics of the participant's socio-demographic information and responses were provided as frequency and percentage for

categorical variables. Continuous variables were reported as mean and standard deviation according to the distribution. SPSS IBM version 26 was used for statistical analysis.

Pearson's correlation was used for correlation between desired variables. Visual binning was used to categorise variable into groups. Split file function was used to categorise data based on BMI and EE score.

RESULTS AND DISCUSSION

A total of 220 responses were collected using a questionnaire method out of which 9 were excluded. The results were divided into separate sections based on the questionnaire like general characteristics, effect of emotions, pandemic specific results and nutritional information and physical activity. The results were projected in the form of percentages or frequencies. Socio-demographic characteristics of the sample are given in Table 3.

The study comprised 211 students between the age group of 17-27 years. The mean age of the students was 21.9 years ± 1.7 years. The other details of the sample characteristics included are given in Table 3. Perceived Weight change was reported by 2.1% where Increase in Weight was seen in 51.7% and Decrease in Weight was seen in 20.4%. But the perception of weight change is not statistically associated to BMI.

Table 3 socio-demographic details

		Frequency (n)	*Percentage (%)*
	Total	*211*	*100.0*
Gender	*Male*	*21*	*10.0*
	Female	*190*	*90.0*
Education	*PG*	*115*	*54.5*
	UG	*96*	*45.5*

BMI classification

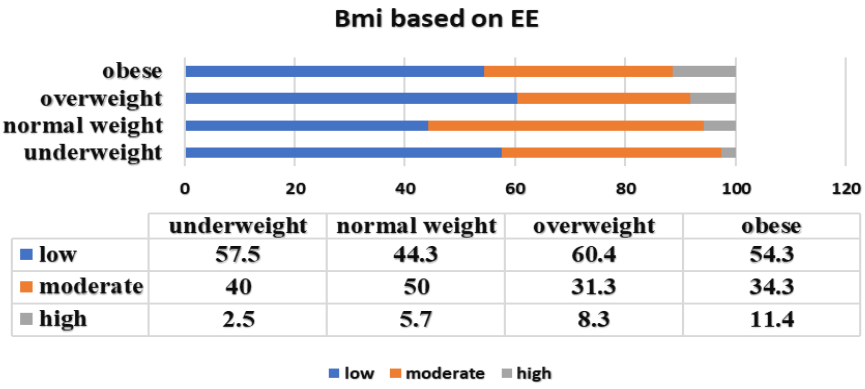
The respondent's nutritional status during the pandemic was evaluated using the self-reported weight and height, based on which BMI was calculated. BMI was categorized as underweight (<18.5), normal (18.6-22.9), overweight (23-26.9), obese (>27) (Asian Classification).

Table 4 BMI classification

	Category	*Frequency (n)*	*Percentage (%)*
BMI classification	*underweight*	*40*	*19*
	normal weight	*88*	*41.7*
	overweight	*30*	*14.2*
	obese	*53*	*25.1*

The mean BMI during quarantine was 22.6 ± 4.5 kg/m2.

BMI was further categorized based on EES score where 6.6%, 41.2%, 52.1 % were high, moderate and low emotional eaters respectively.



	underweight	normal weight	overweight	obese
low	57.5	44.3	60.4	54.3
moderate	40	50	31.3	34.3
high	2.5	5.7	8.3	11.4

Figure 1 Body Mass Index based on Emotional Eating Score

Emotions and Food

Among the respondents, 46% said that emotions affect the way they eat, while 36.5% said that emotions sometimes affect the way they eat and 17.5% said emotions don't have any effect on their consumption. Perceived weight change and effect of emotion on consumption had negative correlation (p = -.163, 0.018).

Emotional Eating Scale

The emotional eating score was divided into three categories using the SPSS visual binning option, the results showed that approximately half of the students reported Emotional Eating. They were divided into low, moderate and high Emotional eaters. Women in the high EE group (21.5 ± 2.2) were younger than women in the low and moderate EE groups (22.0 ± 1.5 and 21.7 ± 1.8, respectively). As might be expected, a greater number of students reported being obese or overweight in the high (28.6% obese, 28.6% overweight) than in the low (17.3%, 26.4%, respectively) and moderate (13.8%, 17.2%, respectively) EE groups (p = 0.003). BMI was significantly greater in the high than in the low and moderate EE groups (24.3 ± 5.5 vs. 22.8 ± 4.5 vs. 22.0 ± 4.4, respectively). The higher mean total EES score of 25.4 ± 13.5 suggests the likelihood of a COVID-19 effect on emotional eating. It has been also found that under other strong negative emotions such as frightened, angry, under pressure and depressed, the majority of the surveyed students tend to reduce their food intake.

Table 5 emotional eating responses

Emotions		*no prediction*	*no desire to eat*	*a little desire to eat*	*moderate desire to eat*	*strong desire to eat*	*overwhelming desire to eat*
Happy	*n*	*19*	*20*	*48*	*47*	*46*	*31*
	%	*9.0*	*9.5*	*22.7*	*22.3*	*21.8*	*14.7*
excited	*n*	*28*	*37*	*41*	*37*	*38*	*30*
	%	*13.3*	*17.5*	*19.4*	*17.5*	*18.0*	*14.2*
relaxed	*n*	*26*	*36*	*47*	*49*	*26*	*27*
	%	*12.3*	*17.1*	*22.3*	*23.2*	*12.3*	*12.8*
bored	*n*	*29*	*25*	*39*	*42*	*35*	*41*
	%	*13.7*	*11.8*	*18.5*	*19.9*	*16.6*	*19.4*
Lonely	*n*	*52*	*45*	*43*	*31*	*25*	*15*
	%	*24.6*	*21.3*	*20.4*	*14.7*	*11.8*	*7.1*
Tired	*n*	*50*	*51*	*39*	*34*	*15*	*22*
	%	*23.7*	*24.2*	*18.5*	*16.1*	*7.1*	*10.4*
frustrated	*n*	*59*	*77*	*30*	*26*	*9*	*10*
	%	*28.0*	*36.5*	*14.2*	*12.3*	*4.3*	*4.7*
nervous	*n*	*80*	*76*	*29*	*16*	*3*	*7*
	%	*37.9*	*36.0*	*13.7*	*7.6*	*1.4*	*3.3*
Sad	*n*	*59*	*64*	*39*	*24*	*13*	*12*
	%	*28.0*	*30.3*	*18.5*	*11.4*	*6.2*	*5.7*
depressed	***n***	***72***	***66***	***28***	***23***	***11***	***11***
	%	***34.1***	***31.3***	***13.3***	***10.9***	***5.2***	***5.2***

	n	***64***	***76***	***26***	***26***	***9***	***10***
Angry	***%***	***30.3***	***36.0***	***12.3***	***12.3***	***4.3***	***4.7***
under	***n***	***80***	***71***	***27***	***19***	***6***	***8***
pressure	***%***	***37.9***	***33.6***	***12.8***	***9.0***	***2.8***	***3.8***
after tragic	***n***	***104***	***63***	***18***	***14***	***5***	***7***
experience	***%***	***49.3***	***29.9***	***8.5***	***6.6***	***2.4***	***3.3***
	n	***91***	***69***	***24***	***19***	***4***	***4***
frightened	***%***	***43.1***	***32.7***	***11.4***	***9.0***	***1.9***	***1.9***
	n	*76*	*62*	*36*	*24*	*7*	*6*
anxious	*%*	*36.0*	*29.4*	*17.1*	*11.4*	*3.3*	*2.8*

Association seen between BMI, physical activity (PA) and certain emotions are given in table 6

Table 6 correlation between BMI, PA and EES

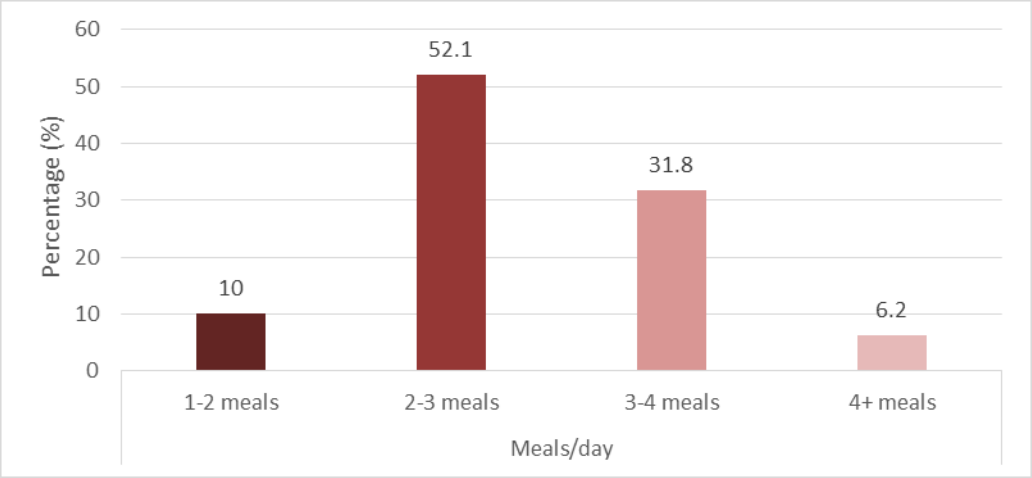
		happy	Frustrated	angry	Sad	depressed	nervous	under pressure
BMI	*p*	**-.157*** **(0.024)**	0.096 (0.164)	0.071 (0.301)	**.142*** **(0.041)**	0.114 **(0.103)**	**.146*** **(0.035)**	**.196**** **(0.005)**
PA	*p*	0.012 (0.864)	**-.174*** **(0.011)**	**-.161*** **(0.019)**	**-.147*** **(0.032)**	**-.147*** **(0.033)**	-0.049 (0.479)	-0.049 (0.480)

****. Correlation is significant at the 0.01 level (2-tailed).**

***. Correlation is significant at the 0.05 level (2-tailed).**

Perceived changes during Covid-19 Pandemic

The perceived changes in meals/day during pandemic was that Most of the subjects i.e., 52.1% preferred to consume 2-3 meals per day, whereas rest differed as given in figure 2. BMI and meals/day are associated [p = .175* (0.01)] and total Emotional Eating score was also positively associated with meals [p = .190* (0.006)].



Most of the subjects i.e., 68.7% consumed 1-2 snacks per day, whereas 11.8% consumed 2-3 snacks per day, 4.7% consumed more than 3 snacks every day and 14.7% reported they didn't consume any snacks.

CONCLUSION

Findings from this study showed associations between EE and changes in number of meals which might affect the eating habits of students. The study findings showed that it is evident certain emotions have effect on eating habits of the students as there was associations seen between BMI, physical activity, changes in number of meals and emotional eating, but it cannot confirm that weight status is influenced by emotional eating. The study showed evident perceived changes in eating behaviour in comparison to usual before COVID-19.

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