# Eating Disorders and their Relation with Emotional Disturbances among Undergraduate Students in Malaysia during COVID-19 Pandemic

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**ABSTRACT**

**Objective:** COVID-19 pandemic has greatly impacted several aspects of undergraduate students' lives including significant effect on mental wellbeing, physical activity and eating habits which might increase the risk for developing eating disorders as these disorders tend to emerge at university age. This study aimed to assess the prevalence of eating disorders and their associated factors among undergraduate students.

**Materials and Methods:** A cross sectional study was conducted among 624 undergraduate students from three different universities in Malaysia. Eating disorders was assessed using the Malay version of the Eating Disorder Examination Questionnaire (EDE-Q) while the emotional disturbances was assessed by the Malay version of Kessler Psychological Distress Scale (K10) and perceived social support was assessed by the revised Malay version of The 8-item Multidimensional Scale of Perceived Social Support (MSPSS).

**Results:** The prevalence of eating disorders among students was 14.9%. There were significant differences in terms of gender and other socio-demographic factors. Eating disorders were significantly associated and positively correlated with emotional disturbances level r = 0.37. While inverse correlation between social support and eating disorders was also shown r= -0.13. Multiple linear regression analysis showed that emotional disturbances level ($\beta$ = 0.212, P = 0.000) and poor social support ($\beta$ = -0.126, P = 0.002) were a significantly important risk factor.

**Conclusion:** Eating disorders are prevalent among undergraduate students, female students, emotional disturbances and high BMI are significantly associated factors. Emotional disturbances and poor social support are predictive factor for eating disorders.

**Keywords:** Eating disorders; psychological distress; social support; undergraduate students; Malaysia (Siriraj Med J 2023; 75: 481-487)

## INTRODUCTION

Eating disorder is a behavioral condition characterized by persistent disturbance in eating behaviors and habits which is associated with distressing emotions and thoughts affecting physical, psychological, and social function.[1] A substantial number of young population a vulnerable to develop eating disorders as 5.5-17.9% of young women and 0.6-2.4% of young men have experienced a DSM-5 eating disorder by early adulthood.[2]

Obsessions with food, appearances and weight may also indicate eating disorders which is generally categorized as anorexia nervosa, bulimia nervosa and binge-eating problems. Eating disorders can also cause a number of problems including: lack of self-esteem, depression and anxiety.[3]

Emotional disturbances are a form of psychological distress in which there is mixture of depression and anxiety symptoms that may result in functional disabilities and

behavioural problems.[4,5] It has been linked with higher risk of development of eating disorders whereby people who are under stress or depression are more likely to have disordered eating.[6]

Since the beginning of COVID-19 pandemic there has been several changes in people's lifestyles due to the movement control orders, social isolation and having to stay indoors for long periods of time along with fear of getting infected with the virus and uncertainty of the future. This sudden and drastic change in lifestyle brought a surge in mental health issues ranging from stress, anxiety and depression.[7]

Students at colleges and universities were also significantly affected by the pandemic as they were required to comply with the lockdown and were forced to continue their studies online which was a new way of learning that the students were not familiar to, which on top of their usual academic stressors, increased the psychological burden on them and affected their mental wellbeing leading to many students fearing academic delay and becoming severely stressed.[8]

This situation is likely to increase the risk and symptoms of eating disorders (EDs). In the context of COVID-19 pandemic, three factors were suggested that could make this pandemic more likely to cause EDs; changes in daily routines, media exposure that are EDs-specific or anxiety-provoking and restrictive diet to boost immunity.[9] There may also be evidence of increase in severity of symptoms of EDs during COVID-19 pandemic due to specific factors such as fatphobic messages, restricted access to healthcare and food insecurity.[10] However, in Malaysia, studies on eating disorders are generally scarce and most of the conducted studies are among teenagers. Our study aimed to assess EDs among young adults. Furthermore, our aim is to assess the impact of emotional disturbances during COVID-19 pandemic on eating disorders.

## MATERIALS AND METHODS

This is cross-sectional study using convenient sampling method was conducted on a sample of 624 undergraduate students from 3 different public universities in Malaysia. The estimated sample size needed was 500, based on a power of 0.95, and the expected prevalence of eating disorders among university students in Malaysia is 13.9%[11], with ±5% as margin of error. More participants were included to account for any dropouts.

Prior to conducting this study, ethical approval was granted by the International Islamic University Malaysia Research Ethics Committee (IREC ID: 2021-140). Informed consent was obtained from the participants after

fully explaining the objectives of the research to them. Participation was entirely voluntary for all participants. All participants were assured of the confidentiality and exclusivity of the data collected for research purposes. To reduce the effects of additional stress, the study was conducted in the middle of the semester, away from the exams period. The inclusion criteria are students aged 18-24 years who agreed to participate in the study and registered as undergraduate students of the participating universities.

### *Questionnaires*
The following questionnaires were used in the study:

### Sociodemographic Background characteristics
Participants' sociodemographic status (faculty, year of study, age, gender, ethnicity, marital status, accommodation, household income, household income), past medical history and past psychiatry history. Other lifestyle status: Physical activity, smoking status.

### The Eating Disorder Examination Questionnaire (EDE-Q)[12]
It is a 28-item self-reported questionnaire adapted from the semi-structured interview Eating Disorder Examination (EDE) and designed to assess the range and severity of features associated with a diagnosis of eating disorder using 4 subscales (Restraint, Eating Concern, Shape Concern and Weight Concern) and a global score. Each item relates to the previous month and a half, and the frequency or intensity is rated on a seven-point Likert scale (where 0 indicates that the feature was not present at all and 6 indicates that the feature was present every day or to an extreme degree).

The Malay version of EDE-Q was used in this study. It has good psychometric properties[13] It is valid and reliable with global Cronbach's alpha value of 0.879.[14]

The global score is calculated by taking the mean of each of the subscale. The cut-off score for clinical significance of each of the subscales and the global score is ≥4[15,16]

### Kessler Psychological Distress Scale (K10)
It is a self-report questionnaire consisting of ten questions with the purpose of determining a person's level of psychological distress. The questionnaire asks questions about anxiety and depressive symptoms that a person has experienced within the past four weeks. Each inquiry pertains to a particular feeling state, and there is a response scale that ranges from one to five points.[17]

In this study, the Malay version of the K10 which

was translated in a previous study by Tiong et al and found to be a valid and reliable screening instrument for psychological distress in a population from Malaysia.[18]

**The revised Malay version of the 8-item Multidimensional Scale of Perceived Social Support (MSPSS)**

It was used to assess the level of perceived social support by the students. It is a brief research instrument meant to examine perceptions of support from three sources: family, friends, and a significant other. The original MSPSS was developed by Zimet *et al.* which contains 12 items. The reliability, validity and factor structure of the MSPSS have been demonstrated across a number of different samples.[19,20]

The revised 8-item MSPSS-M had good internal consistency, as indicated by Cronbach's alpha coefficients of 0.91, 0.93, and 0.92, respectively, for the total scale, family, and friends variables. For the purpose of determining the participants' levels of social support in this study, we utilised a redesigned version of the 8-item MSPSS-M.[21]

**Statistical analysis**

Both descriptive and inferential analysis were carried out with the help of SPSS software version 26.0. The findings of the analysis of the factors, which included age group, gender, nationality, monthly household income, marital status, academic year, and type of accommodation, were presented in the form of numbers and percentages.

In order to determine whether or not the distribution of each variable was normal, the Kolmogorov-Smirnov tests were carried out. The Independent T-test and One-way ANOVA were used to determine the univariate association between the demographic variables (gender, study phase, family monthly income, age, accommodation, psychological distress level, and body mass index). Then, each of the variables of eating disorders that had an association that got statistical significance in the univariate analysis of eating disorders (p< 0.05) was included in the multiple linear regression models for eating disorders. It was determined to be significant if the value of P was less than 0.05.

**RESULTS**

It was found that the 624 participants have a mean age of 21.79 years. 457 (73.2%) of the participants were female, 619 (99.2%) were single, and 242 (38.8%) had a low family income. 318 (51.0%) of the students stayed at home with their parents, 143 (22.9%) were severely distressed, and 373 (59.8%) had normal BMI levels. The prevalence of eating disorders was 14.9%. The mean scores for each subscale were analyzed and a cut-off score of ≥4 is considered as clinically significant and it was found that the mean score for shape concern is the highest. (Table 1). There were statistically significant differences (P < 0.05) in terms of gender, age, year of study, living situation, psychological distress, and BMI among individuals with an eating disorder. (Table 2)

According to the results of the Spearman correlation test, there is a positive correlation between psychological distress and eating disorders, whereas there is an inverse correlation between eating disorders and the level of social support (Table 3).

Multiple linear regression analysis showed that psychological distress (with a β coefficient of 0.212 and a significance level of 0.000) and social support (with a β coefficient of -0.126 and a significance level of 0.002) are significantly important risk factors for eating disorders among the students (Table 4).

**TABLE 1.** Prevalence and mean score for EDE-Q subscales.

| Subscale | N (%) | Mean (SD) |
|---|---|---|
| **Restraint Concern** | | |
| Clinically significant | 583 (93.4) | 5.98 (7.13) |
| Non significant | 41 (6.6) | |
| **Eating Concern** | | |
| Clinically significant | 604 (96.8) | 4.43 (5.64) |
| Non significant | 20 (3.2) | |
| **Shape Concern** | | |
| Clinically significant | 536 (85.9) | 14.24 (12.90) |
| Non significant | 88 (14.1) | |
| **Weight Concern** | | |
| Clinically significant | 570 (91.3) | 7.36 (7.26) |
| Non significant | 54 (8.7) | |

**TABLE 2.** Associated factors with the mean global score of eating disorder questionnaire.

| Factor | Mean (SD) | *P* value |
|---|---|---|
| **Gender** | | |
| Male | 1.77 (1.69) | **0.033** |
| Female | 2.04 (1.89) | |
| **Faculty** | | |
| Medicine | 1.76 (1.66) | **0.005** |
| Dentistry | 2.22 (2.00) | |
| Industrial science | 1.63 (1.66) | |
| **Year of study** | | |
| 1 | 2.23 (2.03) | **0.006** |
| 2 | 2.14 (1.89) | |
| 3 | 1.59 (1.66) | |
| 4 | 1.80 (1.68) | |
| 5 | 1.57 (1.45) | |
| **Marital status** | | |
| Married | 1.49 (2.02) | 0.615 |
| Single | 1.97 (1.84) | |
| **Nationality** | | |
| Malaysian | 1.97 (1.85) | 0.079 |
| Non-Malaysian | 1.10 (.55) | |
| **Race** | | |
| Malay | 1.96 (1.82) | 0.157 |
| Chinese | 1.60 (1.83) | |
| Indian | 2.21 (1.45) | |
| Indonesian | 1.75 (1.77) | |
| Bumiputera | 3.29 (2.52) | |
| **Accommodation** | | |
| With parent | 2.22 (1.99) | **0.001** |
| Hostel | 1.72 (1.64) | |
| Rented house | 0.77 (1.28) | |
| **Family income** | | |
| ≤ Rm 5000 | 1.99 (1.81) | 0.213 |
| RM 5000 -9999 | 1.77 (1.78) | |
| ≥ RM 10000 | 2.10 (1.92) | |
| **Level of distress** | | |
| Normal | 1.36 (1.37) | **0.000** |
| Mild | 1.86 (1.57) | |
| Moderate | 1.96 (1.79) | |
| Severe | 3.06 (2.29) | |
| **BMI level** | | |
| Underweight | .85 (.98) | **0.000** |
| Normal | 1.92 (1.85) | |
| Overweight | 3.41 (1.60) | |
| Obese | 3.47 (1.52) | |
| **Social support** | | |
| Low support | 2.47 (2.36) | **0.045** |
| Moderate support | 2.07 (1.87) | |
| High support | 1.79 (1.72) | |

**TABLE 3.** Correlation of variables with eating disorder.

| Variable | Correlation Coefficient | *P*-value |
|---|---|---|
| Psychological distress | 0.37 | **0.000** |
| Social support | -0.13 | **0.002** |

**TABLE 4.** Predictors of eating disorders in multiple linear regression analysis.

| Variable | β | t | 95% Confidence Interval for B | | Significant |
|---|---|---|---|---|---|
| | | | Lower bound | Upper bound | (p<0.05) |
| Age | 0.02 | 0.24 | -0.17 | 0.21 | 0.812 |
| Gender | -0.64 | -1.59 | -0.59 | 0.61 | **0.011** |
| BMI | 0.01 | 0.50 | 0.00 | 0.00 | 0.615 |
| Psychological distress | 0.21 | 4.61 | 0.03 | 0.06 | **0.000** |
| Social support | -0.12 | -3.18 | -0.32 | -0.07 | **0.002** |

## DISCUSSION

COVID-19 pandemic affected all aspects of people's lives including restriction of leaving home and staying indoors for long durations which lead to reduction in physical activity and higher levels of stress due to fear of getting infected and separation from family and friends. These circumstances can affect eating habits either by unhealthy coping mechanisms like stress eating while on the other hand some people can become more health conscious and seek to eat healthy food, restrict certain types of food and increase physical activity. Subsequent to this we can expect eating disorders to increase during this pandemic.

This study found that 14.9% of students suffer from an eating disorder, which is lower than the prevalence rates found in previous studies done during COVID-19 pandemic which were 46.5%, 23.5%, 57.51%.[22-25] There are several reasons for the lower prevalence of eating disorders in our study from previous studies like the use of different study tool with different cut-off scores, different durations of sample collection or different waves of COVID-19 pandemic. Another important reason is cultural differences that play an important role in the beliefs and actions of people towards the pandemic and its outcomes. The EDE-Q questionnaire is regarded as a valid and reliable instrument for assessing eating disorder due to its high internal consistency reliability (= 0.93), acceptable test-retest reliability over 14 days, and acceptable equivalence reliability of its items.[25]

In patients with eating disorders during the pandemic, there was an increase in EDs symptoms, as well as anxiety, depression, and changes in BMI as demonstrated by a study in Canada.[26] Studies conducted all over the world on the topic of the correlation between gender and eating disorders yielded conflicting findings. Most research has found that women are more likely to suffer from eating disorders.[27,28] Consistent with previous research, this study found a significant gender difference where females showed significantly higher mean global scores in EDE-Q which could be attributed to inappropriate compensatory behaviours, such as bulimic ED, body checking or body avoidance, and binge eating.

In our study, age also appears to be a significant factor, where participants younger than 22 years showed higher mean EDE-Q scores. In a previous study[29], this trend of score decline with advancing age was also demonstrated. In the same study, age was not statistically significant in multiple linear regression analysis similar to our findings. The same result can be observed in years of study, which may be directly correlated with age, but other factors,

such as the level of distress in each year of study, can also be considered.

As BMI increases, the influence of BMI on eating disordered behaviour grows. This study showed a significant association between overweight and obese participants with higher EDE-Q global mean score. This finding is similar to previous studies.[29,30] Another research among medical students in Iraq showed that many students with normal BMI have eating disorder this difference in results may be due to the use of different tool for assessing eating disorders.[23]

In a previous study they found that BMI was a significant predictor of disordered eating through regression mode.[31] However there was no statistically significant regression model between BMI and EDE-Q score in our study suggesting that there is no correlation between BMI and eating disorders during the COVID-19 pandemic.

In multiple linear regression analysis, psychological distress appears to be one of the most important significant factors contributing to disordered eating, with a significant upward trend across all groups. A person with a high level of psychological distress is more likely to engage in emotion-oriented coping, which may result in higher levels of disordered eating.[31] Multiple variables, including coping mechanisms and social support, can be linked to high levels of distress. In our study, psychological distress was positively correlated with eating disorder, whereas social support was negatively correlated, indicating that these two variables are in some way interrelated. When there is a high level of social support, it may act as a stress buffer and protective barrier in relation to the psychological distress level of students,[32] This correlation of variables indicates that social support is essential for preventing increased psychological distress levels, which may also prevent students from exhibiting symptoms of psychological distress such as depression, anxiety, and eating disorders.

## CONCLUSION

High rates of eating disorders exist among undergraduates. Females, younger students, those with a high level of emotional disturbances, a high BMI are associated with eating disorders. Poor perceived social support and emotional disturbances are potential predictors for eating disorders.

## ACKNOWLEDGEMENTS

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