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ORIGINAL ARTICLE

Prevalence of Development of Eating Disorders among Students in University of Cyberjaya.

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Abstract

Introduction: The World Health Organization (WHO) estimates that worldwide, 70 million people have an eating disorder. The aim of this research is to determine the prevalence of development of eating disorders and the association between selected socio-demography and development of eating disorders among the students of University of Cyberjaya.
Methods: A descriptive cross-sectional study was conducted among students in University of Cyberjaya, Malaysia. A total of 231 students were selected via stratified random sampling and simple random sampling. A self-administered questionnaire was adapted from the validated Eating Attitude Test-26 (EAT-26). The questionnaire administered was a combination of the Eating Attitude Test-26 and items related to socio-demographic profile. Descriptive analyses were performed to provide background information of at-risk students by selected socio-demographic profile.
Results: 38.1% were found to be at risk of developing eating disorders with a higher prevalence among females (39.4%) compared to males (34.4%). There was no significant association seen in the selected socio-demographic (gender, age, ethnicity, faculty of study and residency) except for monthly allowance (p-value = 0.014).
Conclusion: The prevalence of developing eating disorders is high among students in University of Cyberjaya with the majority among females. Strategies to detect eating disorders should be implemented, enabling them to seek help from health professionals as early as possible.

Keywords: sociodemographic, eating disorders, EAT-26, university students, Cyberjaya.

Introduction

Eating disorders are illnesses in which people's eating habits, as well as their thoughts and emotions, are severely disrupted. The American Journal of Clinical Nutrition published a study in 2019 that found between the years of 2000 to 2018, the global prevalence of eating disorders increased from 3.4% to 7.8%.[1] Anorexia Nervosa, Bulimia Nervosa, and Binge-Eating Disorder are the three most common eating disorders. A distinctive pattern of disturbed and harmful eating behaviour characterises each disorder. According to a 2008 study, the lifetime prevalence of bulimia nervosa, anorexia nervosa and binge eating disorder in women was estimated to be 1.5 percent, 0.9 percent and 3.5 percent, respectively, while the lifetime prevalence in men was estimated to be 0.5 percent, 0.3 percent and 2.0 percent.[2] It is also contributed by a fear of being overweight, which can lead to a variety of weight-loss behaviours such as extreme dieting, excessive exercise and self-induced vomiting. Eating disorders can be life-threatening and have both psychological and physical ramifications.

The World Health Organization (WHO) estimates that worldwide 70 million people have an eating disorder. Although no concrete study on the prevalence of eating disorders has been conducted in Malaysia, it is estimated that 3% suffer from bulimia nervosa while 1% of the population having anorexia nervosa, translating between 250,000 to 900,000 sufferers.[3] Especially in teens and women, where they tend to be at their best appearance and try to overcome peer pressure and insecurities. A survey conducted by the Malaysian Psychiatric Association (MPA) revealed for every 10 to 20 females suffering from eating disorders, one male suffers from the same problem, although males are less likely to seek help.[4]

In this era of globalization, mental health and eating disorders are rising. A study conducted in 2018, has reported 119 (42.7%) out of 279 medical students were detected with possible eating disorders.[4] The aim of our study is to determine the prevalence of the development of eating disorders and to observe the association between selected socio-demography and development of eating disorders among the students in University of Cyberjaya.

Materials and methods

Study Location, Design, Population and Sample

The study was conducted at the University of Cyberjaya, Cyberjaya, Selangor. The study design used for this study was a descriptive cross-sectional study. The population was the students of the University of Cyberjaya, which comprised 2999 students. Students were differentiated by the different faculties. The inclusion criteria for conducting this study are University of Cyberjaya students who must be between 16 to 30 years of age. The exclusion criteria for this study are those students who do not have a registered matric number and are enrolled in a post-graduate course.

Sampling method and size

The methods used for this study were stratified random sampling and simple random sampling. The university population was divided into 7 different faculties (Centre of Foundation Studies, Faculty of Traditional & Complementary Medicine, Faculty of Pharmacy, Faculty of Safety and Health, Faculty of Allied Health Sciences, Faculty of Medicine, and Faculty of Business Management). From a total of 2999 students in the University of Cyberjaya, we determined the number of samples for each different faculty through the single proportion ratio. Selection of samples required the name list of respective faculties. A randomizer application was used to determine the students involved in this study. The single proportion formula was used to calculate the sampling size. Non-respondents were set at 10%. Based on the expected prevalence of developing eating disorders from previous studies, we found out the highest sample size is 196 which

would be the minimum number of sample size in this study.

Data Collection

Data collection was conducted for 21 days from 30 October 2020 to 20 November 2020. The main instrument for collecting the data was the questionnaire. The questionnaires were handed to each faculty leader and were distributed among each respective respondent according to the sampling methodology (randomized). The faculty leaders collected the questionnaire upon completion of answering and counted the number of questionnaires to prevent any loss/unreturned questionnaires from the respondent. All data collected from this study were only accessible by researchers and authorities to ensure the study is conducted correctly.

Study Instruments

A self-administered questionnaire was adapted from the validated Eating Attitude Test-26 (EAT-26). The Eating Attitude Test 26 (EAT-26) is a self-report questionnaire used to assess eating disorder psychopathology and the risk of developing an eating disorder.[5] A multi-dimensional self- administered questionnaire with 26 items is used to assess eating attitudes and behaviour. There are 3 domains which are bulimia and food preoccupation, oral control and dieting. The items are measured using a scale of 1 (Never) to 6 (Always). The English version of the EAT-26 has been validated in university and college samples in Malaysia.[6] Internal reliability coefficients for EAT-26 range from 0.77 to 0.83. [7]

The validated Eating Attitude Test-26 (EAT-26) included items related to selected socio-demographic profiles with a total of 36 questions. The questionnaire was divided into 2 sections, Section A: Sociodemographic with 10 questions and Section B: Eating Disorders (EAT-26) with 26 questions. Section B consists of a multiple-choice question where the respondents are given 6 options and are required to choose only one by ticking a circle. The answers consist of Always, Usually, Often, Sometimes, Rarely and Never. The questionnaire is included in the appendix.

For grading the questionnaire, all questions except question 25, will receive the following values: 3 for Always, 2 for Usually, 1 for Often, 0 for Sometimes, Rarely and Never. For question 25, the responses receive these values; 0 for Always, Usually and Often, 1 for Sometimes, 2 for Rarely, 3 Never. After each item has been scored, add the scores for the total. If the score is over 20, respondents will satisfy the "Yes" criteria for Development of Eating Disorders.[5]

Pre-test was conducted for evaluation of the questionnaire before distribution. The sample for the pre-test was carried out in the same manner as this study. The pre-test was used to evaluate the questions whether it is relevant to avoid misconception. The average time needed to complete the questionnaire will also be decided through the pre-test. Any misconceptions and problems identified will be corrected. Pre-test was done on a total of 25 Multimedia University (MMU), Cyberjaya students.

Results

Prevalence of the development of eating disorders

Among 231 students from the University of Cyberjaya, 38.1% were found to be at risk of developing an eating disorder (Table 1).

Prevalence of the development of eating disorders by selected socio-demographic factors

The prevalence of the development of eating disorders is higher in females with 39.4% compared to males with 34.4% (Table 2). The age group with the highest prevalence of the development of eating disorders are 26-30 years old (50.0%) followed by 16-20 years old (44.7%) (Table 3). Based on ethnicity, Others (person not of any race mentioned) had the highest prevalence

with 38.7% followed by Malay with 38.6%, Indian with 38.5% and Chinese with 34.5% (Table 4). Based on Table 5, the Faculty of Allied Health Sciences has an increased risk of developing an eating disorder with 45.2% followed by the Centre of Foundation with 43.5%. Among the 7 faculties, Faculty of Medicine was found to have the lowest prevalence with 28.3% (Table 5). Students living with parents were found to have a higher prevalence compared to students living in hostels with 38.5% and 35.5% respectively. However, Others in residency (not living with parents nor hostel) with 40.4%, have the highest prevalence of the development of eating disorders (Table 6). Table 7 portrays the students with a monthly allowance of >RM 1000 have the highest prevalence of the development of eating disorders with 57.9%.

Association between selected socio-demographic factors and the development of eating disorders

Table 1 to 7 portray the association between selected socio-demographic factors and the development of eating disorders. There is an association between monthly allowance and development of eating disorders (Table 7). The data P value is 0.014 which is <0.05, failing to reject the null hypothesis. For other selected socio-demographic factors (gender, age, ethnicity, faculty of study, residency) the data p value is >0.05 thus there is no significant association with the development of eating disorders.

Discussion

Despite limitations, we were able to conduct the study with the sample size (n = 231) to ascertain the prevalence of developing eating disorders (EDs) among students in University of Cyberjaya. In the study, about 38.1% of the students are at risk of developing EDs through the EAT-26 questionnaire. Another study conducted in UPM shows about 18.2% have an increased risk of eating disorders using EAT-26.[8] The prevalence in the study conducted by UPM is considerably lower could be due to the differences in the inclusion of faculties, where the UPM study was only conducted among the medical faculty as compared to this study which involved other faculties (including non-medical faculties). However, another cross-sectional study conducted previously showed 119 (42.7%) medical students exhibit a high risk of possible EDs which were detected by SCOFF questionnaire.[4] The difference in the use of questionnaires may be a factor to the higher prevalence as compared to our study.

According to this study, the questionnaire reported female (39.4%) to have a higher prevalence of developing EDs compared to males (34.4%). This is consistent with the findings from three previous studies where females have a higher prevalence of eating disorders of between 45.7%-48.0% compared to males 17.0%-19.3%.[4,9,10]

The age group of 26-30 years old has the highest prevalence of developing EDs with 50.0%, followed by 16-20 years with 44.7% and 21-25 years with 32.0%. The findings contradict a previous study conducted by Memon et al. in 2012[2] where it was recorded the highest prevalence is among the younger age group. Another previous study done by Ngan et al. found the highest prevalence of developing EDs was in the 20 - 24 years old age group.[11] In our study, the lowest respondents were 26-30 years old with a total of 6 compared to 21-25 years old with 122 respondents. The lack of respondents in the 26-30 age group could be a factor in the inconsistency in the results. This would be due to the fact that there are a smaller number of students among the 26-30 years age group enrolled in the pre-graduate course as compared to other age groups. The majority of the 26-30 years age group in the university are enrolled in the post-graduate courses, which are in the exclusion criteria of this study. Another factor which contributed to the sampling bias is that the sampling method used was stratified based on the different faculty and

not the sociodemographic factors (such as age group).

Ethnicity of Others (non-Malay, non-Indian, non-Chinese) proved to have the highest prevalence of developing eating disorders with 38.7% compared to Malays (38.6%) and Indians (38.5%) with Chinese having the lowest prevalence (34.5%). This outcome is similar to that of a study by Ngan et al. in Malaysia, where the highest prevalence is among Others (16.6%) compared to Chinese (6.2%) which is the lowest.[11]

Students studying in the Faculty of Allied Health Sciences have the highest prevalence with 45.2%. The lowest prevalence are students studying in the Faculty of Medicine with 28.3%. Previous studies were mostly conducted among medical students and no other health faculty was involved.

In residency, Others (not living with parents or in hostel) (40.4%) have the highest prevalence of eating disorders. When comparing living in a hostel with living with parents, the latter has a higher prevalence with 38.5% compared to 35.5%. This result was noted to be inconsistent with studies conducted previously where students living in hostels have a higher risk of developing EDs. [11-13] This difference may be due to our study not categorizing it based on hostel or non-hostel only.

Students with a monthly allowance of > RM 1000 have the highest prevalence of developing EDs (57.9%). This is corroborated by Ngan et al. in his study which found that the highest prevalence to have risk of eating disorders were also among students that have a monthly allowance > RM 1000 (76.6%).[11]

Based on our study, there is no association between age, gender, ethnicity, faculty, residency and the development of eating disorders. These findings are similar to a study done among medical students in Perak, Malaysia that did not have significant association between sociodemographic factors (age, gender and ethnicity) and risk of having eating disorders.[4] Another study that was done among medical students among private medical institutions in Malaysia also showed that there are no significant associations between socio-demographic factors (age, gender, ethnicity, residency) and development of eating disorders.[11]

However, a study in 2019 shows a significant association between socio-demographic factors (age and residency) and development of eating disorders.[13] A study done in South Australia, shows there is no significant association between an individual's income with development of eating disorders.[14] Another cross-sectional study conducted in the United States among adolescents also revealed there is no correlation between income and eating disorder.[1] However, in the University of Cyberjaya, we found that there is an association between monthly allowance and development of eating disorders with the data p-value of 0.014, which opposes previous studies.

Conclusion

Within the large field of eating disorders (EDs), it's vital to note that research on EDs in Malaysia is still in its early stages, and that research is restricted, albeit rapidly growing. Further studies should be conducted in the community as the studies have mostly been conducted among medical students and in universities. Clinical studies are required to advance our understanding regarding these disorders. Other factors linked to the development of eating disorders should be investigated further in community-based studies to widen the breadth of findings that are applicable to the larger ED population.

Overall, students in University of Cyberjaya have a high prevalence of developing eating disorders. Although a medical institution where a heightened awareness of eating disorders is expected (not explored in this study), the risk of the prevalence of developing eating disorders is still high, calling for the need to increase awareness and implement strategies to reduce the prevalence of of eating disorders. With little contribution from this study, many individuals could benefit as they could be more aware of themselves being at risk of developing EDs, thus

enabling them to seek a medical professional early before complications arise.

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Table 1. Prevalence of the development of eating disorders among the students in University of Cyberjaya.

Eating Disorder	Frequency (n)	Percentage (%)
Yes	88	38.1
No	143	61.9
Total	231	100

Table 2. Prevalence & association of the development of eating disorders by gender among the students in University of Cyberjaya.

Gender	Eating Disorder		Total, n (%)	P-Value[1]
	Yes, n (%)	No, n (%)		
Male	21 (34.4)	40 (65.6)	61 (100)	0.492
Female	67 (39.4)	103 (60.6)	170 (100)	

[1] P value is 0.492. Since P value is more than 0.05 thus, we fail to reject the null hypothesis. There is no association between gender & the development of eating disorders among students in University of Cyberjaya.

Table 3. Prevalence & association of the development of eating disorders by age among the students in University of Cyberjaya.

Age	**Eating Disorder**		**Total, n (%)**	**P- Value[2]**
	Yes, n (%)	**No, n (%)**		
16-20 years	46 (44.7)	57 (55.3)	103 (100)	0.123
21-25 years	39 (32.0)	83 (68.0)	122 (100)	
26-30 years	3 (50.0)	3 (50.0)	6 (100)	

[2] P value is 0.123. There is no association between Age and development of eating disorders among students in University of Cyberjaya as the P value is more than 0.05 thus fail to reject the null hypothesis

Table 4. Prevalence & association of the development of eating disorders by ethnicity among the students in University of Cyberjaya.

Ethnicity	**Eating Disorder**		**Total,**	**P- Value[3]**
	Yes, n (%)	**No, n (%)**	**n (%)**	
Malay	56 (38.6)	89 (61.4)	145 (100)	0.980
Chinese	10 (34.5)	19 (65.5)	29 (100)	
Indian	10 (38.5)	16 (61.5)	26 (100)	
Others	12 (38.7)	19 (61.3)	31 (100)	

[3] P value is 0.980. Since P value is more than 0.05 thus, we fail to reject the null hypothesis. There is no association between ethnicity & the development of eating disorders among students in University of Cyberjaya.

Table 5. Prevalence & association of the development of eating disorders by Faculty among the students in University of Cyberjaya.

		Eating Disorder		Total, n (%)	P-Value[4]
		Yes, n (%)	No, n (%)		0.541
Faculty of Study	**Centre of Foundation**	10 (43.5)	13 (56.5)	23 (100)	
	Faculty of Medicine	15 (28.3)	38 (71.7)	53 (100)	
	Faculty of Pharmacy	9 (31.0)	20 (69.0)	29 (100)	
	Faculty of Allied Health Sciences	28 (45.2)	34 (54.8)	62 (100)	
	Faculty of Traditional & Complementary Medicine	2 (28.6)	5 (71.4)	7 (100)	
	Faculty of Safety and Health	19 (42.2)	26 (57.8)	45 (100)	
	Faculty of Business Management	5 (41.7)	7 (58.3)	12 (100)	

[4] P value is 0.541. Since P value is more than 0.05 thus, we fail to reject the null hypothesis. There is no association between faculty & the development of eating disorders among students in University of Cyberjaya.

Table 6. Prevalence & association of the development of eating disorders by residency among the students in University of Cyberjaya.

Residency	**Eating Disorder**		**Total, n (%)**	**P- Value[5]**
	Yes, n (%)	**No, n (%)**		0.862
Living in Hostel	22 (35.5)	40 (64.5)	62 (100)	
Living with Parents	47 (38.5)	75 (61.5)	123 (100)	
Others	19 (40.4)	28 (59.6)	47 (100)	

[5] P value is 0.862. Since P value is more than 0.05 thus, we fail to reject the null hypothesis. There is no association between residency & the development of eating disorders among students in University of Cyberjaya.

Table 7. Prevalence & association of the development of eating disorders by Monthly Allowance among the students in University of Cyberjaya.

		Eating Disorder		Total, n (%)	P-Value[6]
		Yes, n (%)	**No, n (%)**		0.014
Monthly Allowance	**RM 100 – 200**	29 (49.2)	30 (50.8)	59 (100)	
	RM 300 – 400	10 (20.8)	38 (79.2)	48 (100)	
	RM 500 - 700	24 (36.4)	42 (63.6)	66 (100)	
	RM 800 - 1000	14 (35.9)	25 (64.1)	39 (100)	
	> RM 1000	11 (57.9)	8 (42.1)	19 (100)	

[6] P value is 0.014. Since P value is less than 0.05 thus, we reject the null hypothesis. There is a significant association between monthly allowance & the development of eating disorders among students in University of Cyberjaya.

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APPENDIX 1: QUESTIONNAIRE

EATING DISORDER QUESTIONNAIRE

Please read the questions CAREFULLY and ANSWER AS HONEST as you can be by ticking the appropriate boxes.

SECTION A: SOCIODEMOGRAPHIC

1	**Age** What is your age? _____ Years
2	**Gender** Male [ ] Female [ ]
3.	**Nationality** State your nationality _____ If Malaysian choose from below; Malay [ ] Chinese [ ] Indian [ ] Others: _____
4.	**Education** Which of the following are you CURRENTLY enrolled in? [ ] Foundation [ ] Diploma [ ] Degree
5.	**Faculty** Centre of Foundation Studies [ ] Faculty of Medicine [ ] Faculty of Pharmacy [ ] Faculty of Allied Sciences [ ] Faculty of Business Management [ ] Faculty of Safety and Health [ ] Faculty of Traditional Chinese medicine [ ]
6.	**Year of Study** Which year of study are you in: YEAR _____
7.	**Semester**

	Which Semester are you currently doing: _____
8.	**Working** Are you working part-time? [ ]
9.	**Residency** Hostel [ ] Living with Parents [ ] Others [ ]
10.	**Monthly Allowance** RM 100-200 [ ] RM 300-400 [ ] RM 500-700 [ ] RM 800-1000 [ ] RM >1000 [ ]

SECTION B: EATING DISORDERS (EAT-26)
Answer the following by ticking only ONE OPTION

QUESTIONS	Always	Usually	Often	Sometimes	Rarely	Never
1. Am terrified about being overweight	O	O	O	O	O	O
2. Avoid eating when I am hungry	O	O	O	O	O	O
3. Find myself preoccupied with food	O	O	O	O	O	O
4. Have gone on eating binges where I feel that I may not be able to stop	O	O	O	O	O	O
5. Cut my food into small pieces	O	O	O	O	O	O
6. Aware of the calorie content of foods that I eat	O	O	O	O	O	O
7. Particularly avoid foods with a high carbohydrate content	O	O	O	O	O	O
8. Feel that others would prefer if I ate more	O	O	O	O	O	O
9. Vomit after I have eaten	O	O	O	O	O	O
10. Feel extremely guilty after eating	O	O	O	O	O	O

11. Am preoccupied with a desire to be thinner	O	O	O	O	O	O
12. Think about burning up calories when I exercise	O	O	O	O	O	O
13. Other people think that I am too thin	O	O	O	O	O	O
14. Am preoccupied with the thought of having fat on my body	O	O	O	O	O	O
15. Take longer than others to eat my meals	O	O	O	O	O	O
16. Avoid foods with sugar in them	O	O	O	O	O	O
15. 17. Eat diet foods	O	O	O	O	O	O
18. Feel that food controls my life	O	O	O	O	O	O
19. Display self-control around food	O	O	O	O	O	O
20. Feel that others pressure me to eat	O	O	O	O	O	O
21. Give too much time and thought to food	O	O	O	O	O	O
22. Feel uncomfortable after eating sweets	O	O	O	O	O	O
23. Engage in dieting behavior	O	O	O	O	O	O
24. Like my stomach to be empty	O	O	O	O	O	O
25. Enjoy trying new rich foods	O	O	O	O	O	O
26. Have the impulse to vomit after meals	O	O	O	O	O	O

-THANK YOU FOR YOUR COOPERATION-