



Risk of disordered eating attitudes and its relation to mental health among university students in ASEAN

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Abstract

Purpose Since there is a lack of information on eating disorders attitudes in Association of Southeast Asian Nations (ASEAN), the aim of this study was to explore the prevalence of eating disorder attitude and its relation to mental distress among university student populations in Indonesia, Malaysia, Myanmar, Thailand and Vietnam.

Methods A cross-sectional questionnaire survey and anthropometric measurement were conducted with undergraduate university students that were randomly recruited. The Eating Attitudes Test (EAT-26) was utilized to determine the prevalence of disordered eating attitudes. The sample included 3148 university students, with a mean age of 20.5 years, SD = 1.6.

Results Using the EAT-26, 11.5% of the students across all countries were classified as being at risk for an eating disorder, ranging from below 10% in Indonesia, Thailand and Vietnam to 13.8% in Malaysia and 20.6% in Myanmar. In multivariable logistic regression analysis, sociodemographic factors (wealthier subjective economic status, and living in a lower middle income country), underweight and overweight body weight perception, psychological factors (depression symptoms and pathological internet use), and being obese were associated with eating disorder risk.

Conclusions Relatively high rates of eating disorder risk were found. This result calls for increased awareness, understanding of eating disorders and related risk factors and interventions in university students in ASEAN.

Level of evidence Level V, descriptive cross-sectional survey.

Keywords Eating disorder risk · EAT-26 · Body weight perception · Mental health · University students · ASEAN

Introduction

Recent trends seem to indicate a rise of eating disorders and disordered eating behaviours in Asia and Southeast Asian Nations (ASEAN) countries [1–3]. Eating disorders such as anorexia nervosa and bulimia nervosa are typically characterised by clinical disturbances in eating behaviour and body

image [2]. The spread of eating disorders and disordered eating behaviours in Asia and ASEAN coincided with economic growth, social transformation in gender roles and traditional family structure and globalization, including exposure to Western culture and media propagating “a thin body ideal”, in the region [2]. Young adults, including university students, are particularly vulnerable to disordered eating behaviours and eating disorders [2]. Among university students in low- and middle-income countries in Asia, the following prevalence of disordered eating attitudes were found: in Bangladesh 40.2% among women and 34.3% among men [4], China 3.2–9.9% among women and 1.2–5.3% among men [5–7], Iran 10.5% among women and 7.5% among men [8], Malaysia 21.3% among women and 13.5% among men [9], Pakistan 17–25.4% among women and 12.9% among men [10, 11], Thailand 6.3–14.6% among women [12, 13], and Vietnam 48.% among female university students [14].

Eating disorders have a “complex aetiology involving transactions among sociocultural, psychological, and biological influences.” [15], such as greater exposure to cultural

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transition, globalization, urbanization and media-contact propagating the Western beauty-ideal [16, 17], body weight and shape concern [4, 5, 11, 18], depression and anxiety [5, 9, 19–22] and pathological internet use [23, 24], and body weight related variables, including body mass index [5, 25].

Since there is a scarcity of information on eating disorders attitudes in ASEAN, the aim of this study was to explore the prevalence of eating disorder attitudes and its relation to body weight perception, mental distress (such as symptoms of anxiety or depression) and body weight related variables in a university student population in five ASEAN countries (Indonesia, Malaysia, Myanmar, Thailand and Vietnam). We hypothesized that three exposures would be associated with greater prevalence of disordered eating behaviours: (1) abnormal body weight perception; (2) mental distress and pathological internet use, and (3) overweight status.

Methods

This cross-sectional investigation is part of a larger study on a range of health behaviours among university students in ASEAN countries. The questionnaire used for data collection was developed in English, then translated and back-translated into the languages (Bahasa, Myanmar, Thai, and Vietnamese) of the participating countries. In each study country, undergraduate students were surveyed in classrooms selected through a stratified random sample procedure (one university department randomly selected from each faculty as a primary sampling unit, and for each selected department randomly ordered undergraduate courses). Informed consent was obtained from participating students, and the study was conducted in 2015. Ethics approvals were obtained from all participating institutions, “Research Ethics Committee, Faculty of Medicine and Health Sciences”, Universitas Muhammadiyah Yogyakarta; the University of Malaya Medical Ethics committee (MECID 201412-905), Malaysia; “Research and Ethical Committee of University of Medicine 1”, Yangon, Myanmar; “Office of the Committee for Research Ethics (Social Sciences), the Faculty of Social Sciences and Humanities”, Mahidol University, Thailand [MU-SSIRB 2015/116(B2)]; and “Committee of Research Ethics of Hanoi School of Public Health”, Vietnam.

Measures

The *Eating Attitude Test-26* (EAT-26) is a validated questionnaire widely used to measure symptoms and features of eating disorders [26]. It consists of 26 questions, with three components: dieting, food preoccupation, and oral control. Scoring is done on a 6-point scale from always to never, and the total sum of EAT-26 scores ranges from zero to 78. The

EAT has a three-factor structure: dieting, food preoccupation, and oral control. The EAT-26 had a Cronbach alpha of 0.96 in the current study. The cut-off score indicating at risk of disordered eating attitudes and behaviours is 20 or above [26]. The EAT-26 has previously been used in several study countries, such as Thailand and Vietnam. For example, the Thai version of the EAT-26 has good criterion related validity [27].

Sociodemographic variables included age, gender, residence, country income and subjective socioeconomic family background. The latter was assessed by rating their family background as wealthy (within the highest 25% in “country”, in terms of wealth), quite well off (within the 50–75% range for their country), not very well off (within the 25–50% range from “country”), or quite poor (within the lowest 25% in their country, in terms of wealth). Responses were collapsed into two groups, being poor or not well off and wealthy or quite well off [28].

Country income was classified according to World Bank criteria into lower middle-income economies (Gross National Income = GNI per capita between \$1,026 and \$4,035) and upper middle-income economies (GNI per capita between \$4,036 and \$12,475) [29].

Residence status was assessed with the question, “What is your current residence?” Response options included, (1) on campus, (2) off campus (on your own), and (3) off campus (with parents/guardians).

Physical and mental health variables

Anthropometric measurements

Students were weighed and measured by specifically trained researchers using standardised procedures [30]. Body mass index (BMI) was calculated as weight in kg divided by height in metre squared. Body mass index (BMI) was classified according to Asian criteria: underweight (< 18.5 kg m²), normal weight (18.5 to < 23.0), overweight (23.0 to < 25.0) and 25 + as obese [31].

Body weight perception was measured with the question, “Do you consider yourself to be very overweight, slightly overweight, about right, slightly underweight, and very underweight?” [28]. In the analysis “very” and “slightly” overweight and “very” and “slightly” underweight, respectively, were collapsed.

The “*Centres for Epidemiologic Studies Depression Scale (CES-D: 10 items)*” was utilized to measure depressive symptoms. For example, “I felt that everything I did was an effort”. Response options ranged from Rarely or none of the time (less than 1 day in the past week)=0 to All of the time (5–7 days in the past week)=3. Total scores of 15 or more were classified as severe depressive symptoms [32] (Cronbach’s alpha=0.71).

Post traumatic stress disorder (PTSD)

Breslau's 7-item questionnaire was used to identify PTSD symptoms in the past month. Items asked whether the respondent had experienced difficulties related to a traumatic experience (e.g., "Did you begin to feel more isolated and distant from other people?"). Participants who scored four or more were classified to be positive for PTSD [33]. (Cronbach alpha = 0.77).

Pathological internet use was assessed with the "Young Diagnostic Questionnaire for Internet Addiction (YDQ)" [34]. The 8-item YDQ utilizes DSM-IV criteria for pathological gambling adjusted to pathological internet use and validated in previous internet investigations [35]. A sample item is, "Have you repeatedly made unsuccessful efforts to control, cut back, or stop Internet and/or smartphone use?" The criteria are assessed through eight 'yes' or 'no' questions, with total scores ranging from 0 to 8 and 'pathological users' scoring ≥ 5 [36] (Cronbach alpha 0.70).

Data analysis

The data were analysed using IBM-SPSS for Windows, version 23 (Chicago, IL, USA). Descriptive statistics were used to calculate frequency of sample characteristics of the study population. Differences in proportion were calculated using Chi-square tests. Multivariable logistic regression analysis (using forced entry) was performed with eating disorder risk (EAT-26 scores 20 or more) as the dependent variable. Socio-demographic characteristics, body weight and mental health related variables, selected on the basis of the literature review, were used as independent variables. $P < .05$ was considered significant.

Results

Sample characteristics and prevalence of eating disorder risk

In all, 3148 university students (Mean age = 20.5 years, SD = 1.6) from all 5 ASEAN countries agreed to participate, ranging from 231 in Indonesia to 1023 in Malaysia. From overall 3629 students invited into the study, 86.7% participated (the response rates for each site were: 69% in Indonesia, 90.4% in Malaysia, 73% in Myanmar, 94% in Thailand, 92% in Vietnam). Almost two-thirds of the sample (63.3%) was female and 65.7% came from a poorer economic family background (21.2% in Indonesia, 41.2% in Malaysia, 73.3% in Myanmar, 79.5% in Thailand and 96.3% in Vietnam).

The prevalence of risk of disordered eating attitudes was 11.5% across all countries, ranging from below 10% in Indonesia, Thailand and Vietnam to 13.8% in Malaysia and 20.6% in Myanmar. Overall, there were no significant gender differences in terms of prevalence of risk of disordered eating attitudes; this was the same for four countries, while in Indonesia the prevalence of disordered eating attitudes risk was higher in men than in women (see Table 1).

Associations with eating disorder risk

In multivariable logistic regression analysis, it was found that wealthier students had a higher risk of scoring above-cutoff on the EAT-26 than poorer students and students residing in a lower middle-income country were more likely to report eating disorder risk than students residing in an upper middle-income country. Compared with students who had normal weight and normal perceived body weight, obese students and students with perceived underweight and overweight had a higher odds of eating disorder risk. Students with depressive symptoms and pathological internet use were more likely to report eating disorder risk than students who did not have depressive symptoms and did not have pathological internet use (see Table 2).

Table 1 Risk of disordered eating attitudes among university students in six ASEAN countries according to gender

Country	Male		Female		Total		P value ¹
	N	Prevalence (95% CI)	N	Prevalence (95% CI)	N	Prevalence (95% CI)	
Indonesia	55	14.5 (7.4–26.6)	176	5.1 (2.7–9.6)	231	7.4 (4.6–11.5)	0.026
Malaysia	504	13.7 (11.0–17.0)	519	13.9 (11.2–17.1)	1023	13.8 (11.8–16.0)	0.503
Myanmar	179	21.2 (15.8–27.9)	248	20.2 (15.6–25.6)	427	20.6 (17.0–24.7)	0.440
Thailand	72	4.2 (1.3–12.2)	692	7.1 (5.4–9.3)	764	6.8 (5.2–8.8)	0.350
Vietnam	344	8.1 (5.7–11.5)	359	10.0 (7.3–13.6)	703	9.1 (7.2–11.5)	0.384
All	1154	12.7 (10.9–14.7)	1994	10.8 (9.5–12.3)	3148	11.5 (10.4–12.7)	0.123

¹Chi-square statistics

Table 2 Associations with disordered eating attitudes

Variable	<i>N</i> (%)	Adjusted odds ratio (95% CI) ^a	<i>P</i> value
Sociodemographics			
Age			
17–19	986 (30.7)	1 (Reference)	
20–21	1430 (45.4)	1.10 (0.83–1.45)	0.521
22–30	750 (23.8)	1.19 (0.87–1.64)	0.284
Gender			
Female	1994 (63.3)	1 (Reference)	
Male	1154 (36.7)	1.21 (0.93–1.55)	0.151
Subjective economic status			
Poorer	2067 (65.7)	1 (Reference)	
Wealthier	1081 (34.3)	1.52 (1.19–1.94)	< 0.001
Residence			
Off campus with parents/guardian	660 (21.0)	1 (Reference)	
On campus or off campus on their own	2486 (79.0)	0.79 (0.58–1.08)	0.133
Country income			
Upper middle income ¹	1787 (56.8)	1 (Reference)	
Lower middle income ²	1361 (43.2)	1.40 (1.06–1.83)	0.016
Body weight, mental health variables			
BMI weight			
Normal (18.5–22.9)	1649 (55.6)	1 (Reference)	
Underweight (< 18.5)	638 (21.5)	0.97 (0.68–1.36)	0.843
Overweight (≥ 23.0–24.9)	300 (10.1)	0.84 (0.56–1.27)	0.407
Obese (≥ 25.0 and more)	380 (12.8)	1.55 (1.10–2.17)	0.012
Body weight perception			
Normal weight	1167 (37.1)	1 (Reference)	
Underweight	787 (25.0)	0.67 (0.46–0.97)	0.036
Overweight	1193 (37.9)	1.42 (1.08–1.88)	0.013
Depression (severe)	334 (10.6)	1.86 (1.34–2.58)	< 0.001
PTSD	741 (23.9)	1.26 (0.97–1.65)	0.086
Pathological internet use	1105 (35.6)	1.38 (1.09–1.76)	0.008

CI confidence interval

P values: bold text indicates a statistically significant difference with a *p*-value less than 0.05

^aHosmer and Lemeshow Chi square = 12.13, *P* = .145; Nagelkerke *R*²: 0.06

¹Malaysia and Thailand

²Indonesia, Myanmar and Vietnam

Discussion

The study found a high prevalence of eating disorder risk of 11.5% (CI 10.4, 12.7) in this sample of university students across five ASEAN countries. Compared with previous studies in Malaysia [9] and Thailand [12, 13], similar estimates of eating disorder risk were found in this study. The prevalence of disordered eating attitudes in this study in Hanoi, Vietnam, was 9.1% (CI 7.2, 11.5), while in a previous study in a small sample of 203 female university students in Hanoi, 48.8% screened positive for possible eating disorder having used the SCOFF [14]; it is noted that the SCOFF negatively correlated with the

EDI-2 questioning the validity of the SCOFF in this study population [14, 17]. Among the five ASEAN study countries the highest prevalence of disordered eating attitudes was found in Yangon, Myanmar (20.6%). Possible reasons seem unclear and may be related to rapid social-cultural changes having taken place in Myanmar recently. Overall, study findings seem to suggest that disordered eating attitudes may also be rising in lower- and upper- middle income countries in ASEAN, comparable to other world regions [4, 37]. Possible explanations for eating disorder attitudes and behaviour in ASEAN may be attributed to greater economic growth and concomitant industrialization and urbanization [2]. Information on socio-cultural

factors that might contribute to disordered eating attitudes in the different ASEAN countries is scarce, which calls for more studies to investigate the role of socio-cultural factors in the development of eating disordered attitudes in these study countries.

Contrary to several previous studies [e.g., 9, 18, 37, 38], which found a preponderance of eating disordered attitudes among female populations, but in agreement with a few studies, such as in Bangladesh [4] Iran [8] and Malaysia [39], this study found a similar prevalence among men and women. Higher obesity among male than female students (analysis not shown) may be one of the possible reasons for similar prevalence rates of eating disordered attitudes among women and men [18]. In addition, it has been proposed that “restricted eating” may be due to participating in “religious fasting or dietary restrictions” among some of the ASEAN groups [39].

Furthermore, having a wealthier family background was found to be associated with disordered eating attitudes. Previous studies [e.g., 8, 40] found that socioeconomic status, including income, can influence eating disorders risk. On the other hand, the prevalence of disordered eating attitudes was in this study higher in countries with lower income levels (Indonesia, Myanmar and Vietnam) than in upper middle income countries (Malaysia and Thailand).

Regarding body weight related variables, this study found, in agreement with other studies [5, 11, 18, 25, 37] that body weight concerns and being obese were associated with eating disorder risk. The results of this study showed that 22.9% were classified as overweight or obese (using Asian criteria), and yet 37.9% felt that they were overweight. Poor body weight perception could lead to health issues such as depression and disordered eating attitudes [8]. Further, the study found, in agreement with previous studies [5, 9, 19, 21–24] that mental distress, including depression and pathological internet use were associated with disordered eating attitudes.

The association between mental distress such as depression and disordered eating attitudes may be explained by the use of disordered eating to “relieve of negative emotions and aversive self-awareness” [21, 41]. The comorbidity between addiction (pathological internet use) and eating disorders may be explained by the addictions model focusing on similar symptoms characterizing both disorders, namely lack of control, craving, and denial [42, 43]. Unlike previous studies [e.g., 20], that found an association between anxiety symptoms and disordered eating attitudes, this study found only associations in bivariate analysis. Interventions geared towards the prevention of eating disorders may need to include mental distress and addictive behaviours.

Strengths and limitations

A particular strength of this study is the large sample of university students and assessed in the same way in each study country in Southeast Asia. As only one university per country was included in this investigation, there are limitations pertaining to the generalizability of the study results. Further, university students are only a minority sector in a society, and disordered eating attitudes, mental and health behaviour risks may be different in other sectors of the population. The data used in the study were obtained by self-report, which could have resulted in socially desirable participants’ responses. The study was based on a cross-sectional survey and, therefore, no causal conclusions can be drawn. Study participation in Indonesia and Myanmar was low, which may have been caused by exam pressure during the survey. A further limitation was that specific measures were not included, such as on body dissatisfaction and media influences and should be incorporated in future studies. Finally, body image was only assessed with one item and future studies should include standardised body image scales.

Conclusion

A relatively high prevalence of disordered eating attitudes was found among undergraduate university students from five ASEAN countries. Several risk factors, including being obese, underweight and overweight perception, depression symptoms and pathological internet use were identified.

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Compliance with ethical standards

Conflict of interest The authors have no conflict of interests to disclose.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

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