

## Eating Disorders in Singapore: A Review

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### Abstract

**Introduction:** Anorexia nervosa, bulimia and binge-eating disorder are the three best recognised eating disorders. Eating disorders have been reported to affect some 1 to 3% of adolescent females in the West. Increasing reports from Asia suggest that it is no longer possible to view these illnesses as 'Western' diseases. Eating disorders are the third most common serious medical disorder in female adolescents, after asthma and depression. It poses a tremendous burden for individuals, families and society. Historical and current studies on eating disorders in Singapore are reviewed, and discussed in the light of available regional and worldwide research. **Methods:** Studies on anorexia nervosa and bulimia in Singapore were identified through a MEDLINE search (from 1979). Information from these studies were supplemented with relevant local monographs on eating disorders. **Results:** Reports of eating disorders have increased over recent years in the local literature. The psychopathology of eating disorders in Singapore is very similar to that described in the Western literature, and in the two main current classification systems. Body dissatisfaction is prevalent among Singaporean Chinese schoolgirls and female undergraduates, with rates not dissimilar to the West. There is a link between 'Westernisation' (based on English being spoken as the main language at home) and body dissatisfaction.

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**Key words:** Anorexia nervosa, Bulimia, Eating disorders, Singapore

### Introduction

Anorexia nervosa, bulimia and binge-eating disorder are the three best described 'eating disorders'. All three are predominantly disorders of women with the core symptoms of shape/weight dissatisfaction and eating abnormalities. Anorexia nervosa is characterised by significant self-induced weight loss secondary to fear of fatness, amenorrhoea (cessation of menstruation for three successive cycles) and faulty perception and experience of one's body (usually through the overestimation of body size/fatness). Although those with bulimia share the same fear of fatness and faulty body perception (albeit in less extreme fashion), the body weight is not abnormally low, there is no cessation of menstruation, and binge-eating is a diagnostic requirement. Binge-eating disorder is like bulimia except for the absence of compensatory purging behaviour.<sup>1</sup>

It is estimated that 1 to 3% of young women in the West have an eating disorder such as anorexia nervosa, bulimia or binge eating.<sup>2</sup> Current estimates of prevalence amongst adolescents and young women in Western industrialised countries suggest that about 0.5 to 1% suffer from anorexia nervosa, 2% suffer from bulimia and 2% from binge-eating

disorder.<sup>3</sup> The peak age of onset is adolescence and young adulthood. It is pertinent to note that anorexia nervosa and bulimia are, together, the third most common serious medical disorder in adolescents after asthma and depression.<sup>4</sup> Industrialisation, modernisation, Westernisation and increasing affluence are invariably linked with increasing obesity and eating disorders.<sup>5-7</sup> Once considered a 'culture-bound' syndrome with relative rarity in non-Western countries, increasing studies point to eating disorders being a global problem rather than a 'Western' one. A literature base is building up in countries such as China,<sup>8</sup> Taiwan,<sup>9</sup> Hong Kong,<sup>10</sup> Japan,<sup>11</sup> India<sup>12</sup> and Pakistan.<sup>13</sup>

Singapore is a highly industrialised and urbanised country with a multi-ethnic population. The Republic of Singapore consists of a main island and 58 smaller islets and covers 616 km<sup>2</sup>. It boasts a high literacy rate and a Gross Domestic Product (GDP) comparable to many western industrialised countries. It is one of the few countries where overweight school children are subject to a mandatory weight control intervention programme [The Trim and Fit (TAF) programme].

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## Methodology

A Medline search was conducted with the keywords anorexia nervosa, bulimia, eating disorder, body weight dissatisfaction and Singapore to identify available peer-reviewed studies or articles relating to eating disorders and body weight dissatisfaction in Singapore. This was complemented with Asian and international studies known to the author. In view of the relative small number of local studies, all the studies were included in this review.

## Singapore Studies on Eating Disorders (Table I)

The earliest study of eating disorders in Singapore was a case report of 7 cases of anorexia nervosa published in 1982.<sup>14</sup> All 7 cases were Chinese females aged between 14 and 24 years at the time of referral to the authors. All admitted to restrictive dieting as the predominant method to achieve weight loss. The authors found the clinical presentation of these cases to be similar to those described in the Western literature. They did suggest that this series of cases was less severe than similar case series in the West. There was a predominance of cases from social class 1 or 2 (5 of the 7 cases). That same year, a case study on one case of bulimia nervosa was also published.<sup>15</sup> A 16-year-old Chinese female with severe weight loss and binge eating was described. The case was noted to eat 'an enormous amount' of food at night when others had retired. She would inevitably insert a finger into her throat to induce vomiting. On admission, the patient weighed 32.5 kg (height 1.45 m; BMI, 15.5 kg/m<sup>2</sup>), having lost a significant amount of weight. A target weight of 40 kg was set for her discharge and the patient eventually achieved this target weight with resumption of menstruation. In retrospect, this

case would currently be diagnosed as anorexia nervosa, binge-purging subtype, rather than bulimia (DSM-IV).<sup>1</sup>

Kok and Tian<sup>16</sup> studied the susceptibility of Singaporean Chinese schoolgirls to anorexia in 656 GCE 'O' level (Secondary 4) schoolgirls with a mean age of 16.5 years. The response to the questionnaire study conducted in 4 girl schools in the West of Singapore was 100%. Respondents had a mean height of 160.6 cm and mean weight of 48.4 kg, compared to a mean height of 158 cm and mean weight of 49.2 kg for all Secondary 4 schoolgirls in Singapore. They found that 56% felt they were too fat and 40% expressed a wish to be a model, dancer or aerobics teacher. Teasing over weight was reported in 38%, and 26% had dieted because of this.

Drive for thinness scores on the eating disorder inventory (EDI) was not significantly different from a group of American college girls. About 2% were high scorers (above 15 points). A further study to compare these high scorers, with respect to family functioning variables, did not find the families of these to be significantly more enmeshed or rigid than in families of low scorers.<sup>17</sup> There were no significant differences found for other variables such as family satisfaction or over-protectiveness.

Wang et al<sup>18</sup> studied a slightly older population – males and females aged 17 to 22 years, with a mean age of 19.1 years. The females were recruited from new students at the National University of Singapore and the males from national service recruits. They found that 58% of females and 28% of males wanted to be thinner. Of the females, 11.4% were in the lowest tertile of body mass index (BMI less than 18.7 kg/m<sup>2</sup>), 'underweight' by WHO standards

TABLE I: SINGAPORE STUDIES ON EATING DISORDERS

| Authors (Year)                   | Method (No.)                                                     | Major finding                                                                                                                                                       |
|----------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ong YL, Tsoi WF, Cheah JS (1982) | Retrospective case series (n = 7)                                | Characteristics of restrictive anorexia nervosa similar to that described in Western literature                                                                     |
| Kua EH, Lee SC, Chee KT (1982)   | Retrospective case report (n = 1)                                | Description of a case of anorexia nervosa, binge-purging subtype                                                                                                    |
| Kok LP, Tian CS (1994)           | Cross-sectional school study (n = 656)                           | Moderately high levels of weight dissatisfaction in this group of Chinese schoolgirls                                                                               |
| Kok LP, Tian CS (1994)           | Cross-sectional school study (n = 656)                           | No significant differences in family functioning variables between high and low drive for thinness scorers                                                          |
| Ung EK, Lee S, Kua EH (1997)     | Retrospective case series (n = 50)                               | Characteristics of restrictive subtype anorexia nervosa, binge-purging subtype anorexia nervosa and bulimia nervosa similar to that described in Western literature |
| Wang MC, et al (1999)            | Cross-sectional study of young adults aged 17-22 years (n = 280) | Western acculturation gauged by the use of English as the language spoken at home was associated with a higher levels of body dissatisfaction                       |
| Ung EK, Lee DSW (1999)           | Pilot study on female medical students (n = 26)                  | Moderately high levels of weight dissatisfaction in a group of female medical undergraduates                                                                        |

(WHO recommends a BMI of 18.5 to 23 kg/m<sup>2</sup> as the healthy weight range of Asians) but still wanted to be thinner; 20% in this tertile thought of dieting and 37% were dissatisfied with their body weight. A link was found between 'Westernisation' (based on English being the main language spoken at home) and body dissatisfaction in females, after controlling for BMI. There was no correlation between parental education level and preference for thinness. Data from a pilot study of 26 female, 4th year medical students from the National University of Singapore also present findings consistent with those of Wang et al. The mean BMI was 18.7 kg/m<sup>2</sup>. Fifty-eight per cent reported feeling very or moderately fat, and only 12% reported not feeling fat. Just under half (46%) expressed body dissatisfaction, and 42% had engaged in dieting to lose weight. Four out of 10 with BMI below 18 reported feeling 'very fat'.<sup>19</sup>

In the largest study of eating disordered patients in Singapore, Ung et al<sup>20</sup> reviewed the clinical characteristics of 50 patients presenting with either anorexia nervosa (50% with restrictive subtype; 16% with binge-purging subtype) or bulimia (32%) to a University psychiatric department over the period 1991 to 1996. Females made up 92% of the sample. The vast majority exhibited fear of fatness (90%), compulsive, excessive and inappropriate efforts to lose weight (96%) and body image disturbance (84%). The presence of bingeing was associated with an older age of presentation, co-morbid depression and attempted suicide. Seventy-one per cent of the sample were students and the mean age of onset of eating disorders was 16.3 years. The majority (78%) had received inpatient care at some stage of their disorder. A history of sexual abuse was reported in 8%. Teasing about weight prior to the onset of eating disorder was common (56%). Although family history of eating disorders was uncommon (4.4%), 31% had a family history of mental illness (depression, schizophrenia and eating disorder being the commonest in this order). Co-morbid mental illness was common, with just over half the sample (52%) suffering from depression at some stage. The commonest methods of weight loss were meal/calorie restriction, compulsive exercise, self-induced vomiting and laxative/enema use. Whereas all previous studies had been confined to Chinese subjects, the ethnic make-up of the sample was Chinese (78%), Malays (10%), Indians (10%) and others (2%). Compared to the ethnic make-up of Singapore as a whole, ethnic Indians were slightly over-represented but this was not statistically significant.

## Discussion

Findings of local studies reflect the change in the view that eating disorders are merely 'disorders of the West'. The increasing number of studies on eating disorder locally

mirrors the regional increase in Asia. The majority of studies are from Japan, China and Hong Kong. In a recent review, Tsai<sup>21</sup> concluded that rates of eating disorders in the Far East, especially anorexia nervosa, are generally lower than that reported in the West, but rates of body dissatisfaction and dieting are similar to those in the West. Older studies tend to report lower rates of eating disorders and more recent studies, higher rates. Studies from Japan generally reported higher rates than Southeast Asian countries. Buhrich,<sup>22</sup> in a study of anorexia nervosa in Malaysia, found 30 cases of anorexia nervosa (28 females; 2 males) among 60,000 psychiatric referrals, corresponding to 0.05% prevalence.<sup>6</sup> Chen et al<sup>23</sup> found only 1 case of anorexia nervosa among 7229 subjects in a large community study using the Diagnostic Interview Schedule, corresponding to 0.03% prevalence in females. In the absence of any prevalence studies for Singapore populations, the prevalence of eating disorders locally would most probably correspond to the more industrialised Asian countries such as Hong Kong, Japan, Korea and Taiwan. Until more community prevalence studies in Asia are published and compared over time, it is difficult to ascertain whether the increasing reports of eating disorders represent a true increase, or that of better recognition and more willingness of sufferers to come forward for treatment.

Wang et al's finding of a correlation between the use of English as the main language spoken at home and body dissatisfaction supports the notion of a link between eating disorders and 'Westernisation'. Such a link between Western culture impinging on ideal body size/shapes have some support.<sup>24</sup> The lowering of the average weight of the Fijian woman coincided with the introduction of Western TV soap operas – *The Melrose Effect*.<sup>25</sup> Asian immigrants to Western countries tend to show increases in rates of eating disorders compared with their counterparts in their home country.<sup>26,27</sup> The risk appears to be more evident in second and subsequent generations, and this may reflect the marked cultural transition between the first and subsequent generations. A study of Chinese university students living in the US showed that higher acculturation was linked with higher indices of disordered eating.<sup>28</sup> Students from 3 different sites in China (Hong Kong, Shenzhen and rural Hunan) showed a consistent increasing gradient of body concerns and dissatisfaction accompanying socio-economic development,<sup>29</sup> possibly reflecting increasing Western influences with increasing prosperity.

It is worth noting that reports from Hong Kong<sup>30</sup> and Japan in the 1950s<sup>31</sup> have shown that some sufferers fulfil all the criteria for anorexia nervosa, except the marked fear of fatness. These 'non-fat phobic' anorexia nervosa sufferers would instead present with epigastric bloating and appetite loss as the main reasons for food refusal. This may reflect

the greater likelihood of Asians to exhibit their psychological distress in somatic rather than cognitive presentations.

Ung et al's study of a Singapore cohort found sufferers to be markedly similar to Western cases with the fulfillment of the DSM-IV criteria.<sup>1</sup> This similarity gives greater confidence in applying the results of the numerous treatment studies that have been done in Western populations conforming to the DSM-III or DSM-IV criteria. Information from family, friends or teachers that might lead a health professional to suspect an eating disorder include: unexplained significant weight loss in an adolescent girl who appears otherwise unconcerned, apparently well and active; increasing secrecy and withdrawal related to eating with the family or school mates or in public; marked change in eating habit—extremely slow, picky or restrictive; vegetarianism; sudden dramatic increase in exercise; sudden change in dressing style like wearing baggy clothing; increased use of the toilet (especially during and after meals) with reports of smell or sight of vomit. Although a BMI <17.5 is sometimes given as an example of <85% of expected weight for height, a lower figure for Singaporeans would be a more realistic indicator of anorexia as Asians tend to have a lower mean BMI compared to Caucasians. The slight over-representation of young females of Indian ethnicity in Ung et al's sample is consistent with a finding of young Indians being over-represented in local and Malaysian adolescent suicide attempters.<sup>32,33</sup> One possible factor could be the clash between more liberal Indian youth who have been exposed to better education and Western ideas, and their more conservative and traditional parents and elders (compared to ethnic Chinese and Malays). Such a process of acculturation stress has been implicated to account for the higher rates of eating disorders amongst South Asian adolescents compared to their Caucasian counterparts in Bradford, United Kingdom.<sup>26</sup>

A number of recently published treatment guidelines provide some consensus opinion on the treatment of choice for eating disorders.<sup>34</sup> Some caution is required with respect to applying these recommendations to children and adolescents, especially with bulimia, as most studies have been conducted on young adults rather than children or adolescents.<sup>35</sup> Very young children with eating disorders would appear to be very uncommon locally as the youngest patient in Ung et al's study was 12 years old. Recent definitive studies point to cognitive-behavioural therapy being the psychological treatment of choice for bulimia. In a study of over 200 patients, comparing cognitive-behaviour therapy and inter-personal psychotherapy (the two foremost psychological treatments for bulimia), Agras et al<sup>36</sup> found that 48% significantly improved on cognitive-behavioural therapy compared with 28% for interpersonal psychotherapy. Although long-term follow-up showed no

statistically significant difference, there were more positive responses to cognitive-behaviour therapy. Whether such therapies work equally well in Asian populations has not received significant study.

Although associations between food, fatness, prosperity and longevity have been part of traditional local culture, the drive to thinness appears to have permeated the younger generation of Singaporeans. Kok and Tian's study of Singapore Chinese schoolgirls reveals rates of body dissatisfaction that are comparable with similar Western female populations. High rates of teasing and dieting were also reported. These are the usual harbingers for future eating disorders. Almost 2% also had been treated for underweight, although the authors did not elaborate if some of the cases were for underweight that was not voluntarily imposed. In view of the prevalence of eating disorders in adolescents and the likely increase with rapid industrialisation of Asian countries, screening questions about eating habits and weight concerns should be part of a routine assessment for every adolescent patient. A number of simple screening questionnaires have been developed for anorexia nervosa and bulimia. The female upper secondary school population would be the most cost-effective to target a screening programme that might involve the use of such instruments (suitably adjusted to take into account cultural nuances). One such instrument is the SCOFF questionnaire developed by doctors at St George's Hospital, London.<sup>37</sup> Its strength lies in its brevity – just 5 questions (Fig. 1). The questionnaire had high sensitivity for anorexia and bulimia (but at the expense of specificity). Some minor rephrasing may be necessary to make it useful in Asian communities (for example, quoting weight loss in kilograms rather than in pounds or stones). Another example is a four-question screening questionnaire for bulimia.<sup>38</sup> It is important to make an early diagnosis in order to intervene early. A more suitable detailed self-rated questionnaire used worldwide is the 26-item Eating Attitudes Test (EAT-26), which is well validated and available in both the Chinese version as well as children's version (ChEAT).<sup>39</sup> Other commonly used screening instruments include the Eating Disorders Inventory (EDI) (Chinese validated version) and the Bulimia Test-Revised (BULIT-S). The gold standard interview schedule remains the Eating Disorders Examination (EDE)<sup>40</sup> which, by virtue of its length, makes it difficult to use in non-specialised settings.

Those with anorexia nervosa are likely to require professional intervention; whereas, self-help manuals have been shown to be effective for bulimia (especially the milder cases).<sup>41,42</sup> The Internet has recently been used to deliver psycho-educational programmes to reduce body image concerns in college women and the preliminary results show promise.<sup>43,44</sup> The high Internet literacy of

young Singaporeans makes this a compelling method in which to deliver psycho-education. Psycho-education should include a basic discussion of some of the known risk factors for eating disorders, the cultural pressures to be thin; local height, weight and BMI norms for age group, sex and race (charts available from 18 years onwards);<sup>45</sup> the “set-point” theory which suggests that each body functions optimally within a narrow weight range; the effects of starvation on the mind and body; the importance of weight restoration and a regular eating pattern (emphasising the use of food as “medicine”); inappropriate and risky weight control strategies and how to determine what is a healthy body weight range for the young person.<sup>46</sup>

TABLE II: BRIEF QUESTIONNAIRES FOR EATING DISORDERS  
SUITABLE FOR SCREENING ADOLESCENTS

#### SCOFF Questionnaire

Do you make yourself Sick because you feel uncomfortably full?  
Do you worry you have lost Control over how much you eat?  
Have you lost more than One stone in a 3-month period?  
Do you believe yourself to be Fat when others say you are too thin?  
Would you say that Food dominates your life?  
(>2 positive responses suggest presence of an eating disorder)

#### 4-item Eating Disorder Screening Questionnaire

How many times have you **dieted** in the past year?  
Do you feel that you need to be **dieting** currently?  
Are you **dissatisfied with your current body size**?  
Does your weight affect how you **feel about yourself**?

Singapore is probably the only country in Asia, and perhaps the world, where all school children are screened for obesity and intervention given in the form of a formal weight control programme. Dieting is the commonest entry point for both anorexia nervosa and bulimia<sup>47</sup> and the implications of such a weight control programme on the genesis and course of eating disorders remain uncertain. Fortunately, the main thrust of these school programmes is towards greater physical activity and good eating choices rather than ‘diets’ per se. Many local subjects who suffer from anorexia nervosa in adolescence report being ‘plump’ or ‘chubby’ before, being teased about their weight and thereafter going on a ‘diet’. Results from long-term studies in the West suggest that there are a significant number of sufferers with a chronic protracted course.<sup>48,49</sup> High rates of premature death in anorectics have been reported, mainly by suicide or a complication of severe weight loss/vomiting. The studies also suggest that a fair number do make a good recovery.<sup>50</sup> Bulimia appears to be more responsive to treatment, and some studies utilising cognitive-behaviour therapy boast of response rates up to 80% (albeit with a high dropout rate). There are, as yet, no local or Asian long-

term outcome studies to confirm if outcome is similar or different to that in Western cultures.

The treatment of eating disorders in Singapore is hampered by the lack of any single stand-alone multidisciplinary facility. Inpatients are treated on general psychiatric wards, as are day patients. A number of specialty outpatient clinics for eating disorders exist, but these share both manpower and treatment setting facilities with general psychiatry. The Hong Kong Eating Disorders Centre, which offers day and outpatient services, is an example of how such services in Asia can further develop. A support group started and run by sufferers and ex-sufferers (Support for Eating Disorder, Singapore – SEDS) lends support to the view that there is increasing public awareness of the disorder, as well as increased willingness of sufferers to talk about their illness and seek help.

#### Practical Implications

Eating disorders are likely to become increasingly prevalent in Asia. Early detection and treatment, coupled with a responsible public education programme (taking pains to reduce sensationalising or glamourising eating disorders), may help avert a looming problem. Eating disorders are no longer uncommon in Asian adolescents and its evaluation should be part of the standard evaluation for every adolescent. A schools-based programme focusing on early detection may help identify cases early. Local prevalence, treatment and outcome studies are urgently needed to increase our information on eating disorders in Singapore.

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