

Eating disorders are often thought to have a cultural component to them. Thinness is a desired characteristic in our culture in spite of the reality that 60% of us are overweight. The Miss America pageant winners have been analyzed since their start to see if what we consider beauty has changed in any way, and it has. The early winners wouldn't even make it as contestants in today's culture.

As a way of examining cultural characteristics and influences on the development of eating disorders, this article examines cultures around the world to see if there are differences in when and how eating disorders are developed and to examine more carefully the role culture plays in its development. FYI

### ***Helping Hearts Heal***

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MedGenMed Ob/Gyn & Women's Health  
Prevalence of Eating Disorders: A Comparison of Western and Non-Western Countries

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## **Abstract and Introduction**

### **Abstract**

**Objective:** To compare the prevalence of eating disorders between Western and non-Western countries.

**Method:** Potential references were identified through an English-language literature search using Medline and Medscape articles.

**Results:** Prevalence rates in Western countries for anorexia nervosa ranged from 0.1% to 5.7% in female subjects. Prevalence rates for bulimia nervosa ranged from 0% to 2.1% in males and from 0.3% to 7.3% in female subjects in Western countries. Prevalence rates in non-Western countries for bulimia nervosa ranged from 0.46% to 3.2% in female subjects. Studies of eating attitudes indicate abnormal eating attitudes in non-Western countries have been gradually increasing.

**Conclusion:** The prevalence of eating disorders in non-Western countries is lower than that of the Western countries but appears to be increasing.

### **Introduction**

Eating disorders, namely anorexia nervosa and bulimia nervosa, are characterized by clinical disturbances in body image and eating behaviors.<sup>[1]</sup> For example, anorexia nervosa sufferers have the feeling of being fat even when emaciated.<sup>[1]</sup> They deny the seriousness of low body weight and have a morbid fear of weight gain with the relentless pursuit of thinness.<sup>[1]</sup> Bulimia nervosa is defined by an overvaluation of weight shape and the behavioral symptoms of recurrent binge eating accompanied by purging and fasting.<sup>[2]</sup> The Eating Disorders Not Otherwise Specified (EDNOS) category reflects the many cases of eating disorder that can be quite severe but do not meet the diagnostic criteria for anorexia nervosa and bulimia nervosa.<sup>[1]</sup>

There have been many reports about eating disorders in Western countries in the late 20th century.<sup>[3-5]</sup> It has been claimed that those with eating disorders have mostly been white women and that few cases have been seen in non-Western countries other than Japan.<sup>[6]</sup> Recently, eating disorders have been reported in non-Western countries, such as the Middle East and the People's Republic of China.<sup>[7-9]</sup> These recent studies suggest that the prevalence of eating disorders has been rising among non-Western countries as well. However, eating disorders may present differently in different cultures, and diagnostic criteria based on Western norms may not always be appropriate.

One of the reported explanations for the development of eating disorders is the social pressure resulting from the standards of female beauty imposed by modern industrial society or Western culture.<sup>[10]</sup> The increasing globalization and exposure to Western media have been suggested to increase the rate of eating disorders in non-Western countries.

This article summarizes our review of the literature to determine the prevalence of eating disorders in non-Western countries and to compare the prevalence of eating disorders between Western and non-Western countries. We also examined differences in attitudes toward eating between Western and non-Western countries.

## **Method**

We searched (Medline and Medscape, 1982-2003) for English-language literature related to the prevalence rate of eating disorders. The reference lists of the medical journal articles found were also examined. An Eating Attitudes Test-26 (EAT-26) was developed by Garner and colleagues<sup>[11]</sup> to examine the level of abnormal eating attitudes, and this test is also used as a predictive measure of development of eating disorders. We examined those surveys using EAT-26, in order to compare the difference between Western countries and non-Western countries with regard to attitudes toward eating.

## **Methodologic Issues**

There were many methodologic issues in the epidemiologic studies of eating disorders, including diagnostic criteria and case detection methods.<sup>[12,13]</sup> In non-Western countries, researchers used translated versions of questionnaires developed in the Western hemisphere. The *Diagnostic Statistical Manual of Mental Disorders* (DSM-IV) or the

International Classification of Diseases 10 (ICD-10) was used to clinically diagnose eating disorders. Larger samples are needed to obtain accurate prevalence figures in non-Western countries because of their lower rates of eating disorders.<sup>[14]</sup> Many studies were conducted using convenience samples, such as community groups, high school or university students, or patients of hospital or clinics. It was very difficult to find studies that are truly population based.

There are instruments to assess eating disorders other than EAT-26. For example, Eating Disorder Inventory (EDI) and Bulimic Investigatory Test and the Edinburgh (BITE) are other Western instruments used to assess eating disorders. These tools and the EAT-26 are culturally based and may not reflect the full spectrum of eating disorders in other cultures. In addition, these tools may have a number of false positives, and translated versions of these scales may not give invariant meanings in different cultures.

## Results

### Prevalence of Eating Disorders in Western Countries

[Table 1](#) shows the prevalence of eating disorders in Western countries. There are some reports on the prevalence of anorexia nervosa. In the United States, Lucas and colleagues reported a longitudinal general population-based survey from 1935-1989.<sup>[15]</sup> Their data revealed that the most vulnerable group for anorexia nervosa comprised girls and young women aged 15 to 24 years. A continual rise in incidence was observed throughout the 55 years of this study. Two studies<sup>[16,17]</sup> of female students to determine the prevalence of anorexia nervosa suggest that the prevalence is higher in Norway (2.6%)<sup>[16]</sup> than in Italy (1.3%).<sup>[17]</sup> A population-based study of anorexia nervosa in the United Kingdom<sup>[18]</sup> found that the prevalence of anorexia nervosa among females aged 15 to 19 years old was 0.1%. The prevalence rate of anorexia nervosa thus seems to be lower in the general population than among students. A study of psychiatric female outpatients in Norway reported a prevalence of anorexia nervosa of 5.7%.<sup>[16]</sup>

Our review found more bulimia sufferers than anorexia sufferers in all countries for which there are published studies (See [Table 1](#)). It is interesting that Hungary reported fewer sufferers than other Western countries.<sup>[19]</sup> Female subjects are more often affected than male subjects for both anorexia nervosa and bulimia nervosa.<sup>[20-22]</sup>

Population-based and clinic-based estimates of anorexia nervosa in Western countries ranged from 0.1%<sup>[18,23]</sup> to 5.7%<sup>[16]</sup> in female subjects, and that of bulimia nervosa ranged from 0%<sup>[17]</sup> to 2.1%<sup>[24]</sup> in male subjects and from 0.3%<sup>[19]</sup> to 7.3%<sup>[16]</sup> in female subjects.

### Prevalence of Eating Disorders in Non-Western Countries

[Table 2](#) shows the prevalence of eating disorders in non-Western countries. Buhrich<sup>[25]</sup> reported that 0.05% of the psychiatric patient sample in Malaysia were diagnosed with anorexia nervosa, and this prevalence rate had not increased for 15 years. Lee<sup>[26]</sup> reported in 1989 that anorexia sufferers were very few in Hong Kong compared with Western

countries. In Japan, Kuboki<sup>[22]</sup> conducted a survey among the general and female patient population of 732 hospitals in 1988. He found that the female patient population had about 1.5 times more anorexia sufferers than the general population, although the prevalence rate was still only 0.0063%. Kuboki repeated the same survey in 1992. The prevalence of anorexia nervosa was now higher than the previous data. Among the general population, the rate had increased from 0.0036% to 0.0045%. Among the female patient population, the rate had increased from 0.0063% to 0.0097%; the proportion of anorexia nervosa sufferers among the female patient population was now twice that in the general population. Nakamura's survey suggested that the rate of anorexia sufferers was 0.0048% among 130 hospitals and 1326 clinics in Japan.<sup>[27]</sup> This figure is similar to the result derived from Kuboki's survey. Results from a questionnaire-based survey recently conducted in Iran indicate that the prevalence of anorexia nervosa is 0.9% among school girls.<sup>[28]</sup> This figure was not obtained by clinical diagnosis, however; and this is the highest rate reported among non-Western countries.

Lee<sup>[29]</sup> reported that 0.46 % of female college students had bulimia nervosa in Hong Kong in 1991, a lower rate than that found by Kiriike (2.9%) in Japan.<sup>[10]</sup> Lee<sup>[29]</sup> also reported that almost all the female students wanted to be slimmer, although they did not try to lose weight. Apart from Asian countries, there are some reports in Islamic countries of bulimia nervosa. Nasser<sup>[30]</sup> in Cairo reported that the estimated prevalence of bulimia nervosa found by administering questionnaires on disordered eating was 1.2% among the school girls; using the same type of survey as the one used in Cairo, investigators estimated that 3.2% of Iranian school girls suffer from bulimia nervosa.<sup>[28]</sup> Again, one should note that these figures were not obtained by clinical diagnosis and that the Iranian rate is the highest among non-Western countries.

Population-based and patient-based estimates of anorexia nervosa in non-Western countries thus ranged from 0.002%<sup>[29]</sup> to 0.9%<sup>[30]</sup> and that of bulimia nervosa ranged from 0.46%<sup>[29]</sup> to 3.2%.<sup>[28]</sup>

There were no population-based prevalence surveys in other non-Western countries. In Singapore in 1982, Ong and colleagues<sup>[31]</sup> published a case report on 7 Chinese females with anorexia nervosa. Ong suggested that there was a low incidence of this disorder in Singapore. Following Ong's report, Ung<sup>[32]</sup> reported in 1997 that 50 anorexia nervosa sufferers were identified, and he suggested there was an increase in the incidence of this disorder.

### **Eating Attitudes Test-26 (EAT-26) in Western Countries**

[Table 3](#) shows the results of EAT-26 studies in Western countries. A few studies of male subjects have been conducted in Western countries. For males, the percentage of abnormal eating attitudes ranged from 0.4% (Spain) to 10% (United States). Male samples showed a lower incidence of abnormal eating behavior than among female subjects in all countries reported here.<sup>[33-36]</sup> Among female samples, there are different prevalence rates given in US reports, with up to 26% of the female subjects having abnormal eating attitudes.<sup>[37]</sup> In Canada, 22.3% of female Canadian subjects (aged 12-20

years) in 1982 exhibited abnormal eating attitudes.<sup>[38]</sup> The percentages declined both in 1993 and in 2001.<sup>[35,39]</sup>

Our review indicates that Switzerland has the lowest incidence of abnormal eating attitudes among female subjects (college students, 8.3%)<sup>[34]</sup> (see [Table 3](#)). Among students in the public ballet school in Berlin in 1998, 21.6% of females showed abnormal eating attitudes.<sup>[40]</sup> This percentage was the highest in recent studies, excluding that reported for the United States. Apart from the United States and Canada's survey in 1982, students majoring in ballet, arts, medicine, and nursing in the United Kingdom had high EAT-26 scores.<sup>[41]</sup> Among females in Western countries, the percentage of abnormal eating attitudes ranged from 8.3%<sup>[40]</sup> to 26%.<sup>[37]</sup>

### **EAT-26 in Non-Western Countries**

We did not come across many surveys using EAT-26 scores in non-Western countries ([Table 4](#)). The reports are divided into 3 groups: East Asian countries, South Asian or Islamic countries, and African countries. Three surveys were conducted in African countries (1 in Nigeria, 2 in South Africa).<sup>[38,42,43]</sup> On the basis of the Szabo and Hollands survey, 37.5% of the black female high school students had abnormal eating attitudes. Among South Asian or Islamic countries (Pakistan, Oman, and Turkey), 39.5% of female nursing college students in their first year of study in Pakistan had abnormal eating attitudes, which was the highest rate among non-Western countries. Oman reported that 10.9% of male subjects had disturbed eating attitudes.<sup>[8]</sup> This was the only report for male students among South Asian countries. In Japan, according to Nakamura's results in 1999, female high school students had higher percentages of abnormal eating attitudes (5.4%) than adult females.<sup>[44]</sup> Nishizawa<sup>[45]</sup> reported in 2003 that 11.2% of the female high school girls had abnormal eating attitudes. There were recent studies of male subjects using EAT-26 scores in Japan. Makino and colleagues<sup>[46]</sup> and Nishizawa and colleagues<sup>[45]</sup> respectively showed that 2.5% and 2.4% of the male college students had abnormal eating attitudes.

In China, only 1 study was conducted using EAT-26 scores.<sup>[46]</sup> The results suggest that the percentages of abnormal eating attitudes were almost the same for male and female college students. This result is different from that in other countries, where female subjects have higher rates than male subjects. In Hong Kong, 6.5% of the female subjects had high EAT-26 scores.<sup>[47]</sup> In Korea, 8.5% of the adults (male and female) had abnormal eating attitudes.<sup>[48]</sup>

The percentage of disturbed attitudes toward eating (EAT-26 scores) in female subjects in non-Western countries ranged from 0.8%<sup>[44]</sup> to 39.5%.<sup>[49]</sup> Those of male subjects ranged from 2.4%<sup>[45]</sup> to 10.9%.<sup>[8]</sup>

### **Discussion**

More female subjects suffered from eating disorders and had abnormal eating attitudes than male subjects in 11 countries reported here. The prevalence rate in non-Western

countries was lower than in Western countries, although it has gradually increased. There is evidence from many studies that gender<sup>[50]</sup> and sociocultural influences play a role in this increase.<sup>[51,52]</sup>

DiNicola<sup>[50]</sup> has argued that a necessary connection between eating disorders and culture exists and can be identified as a cultural change syndrome that emerges under conditions of rapid economic and sociocultural change. DiNicola also suggested that cultural changes occur in 2 broad ways: cultural evolution and human migration. Thus, anorexia nervosa may be more prevalent during times of cultural change and confusion for immigrants and individuals in rapidly developing countries.

Tsai<sup>[53]</sup> has suggested that a component of cultural change, such as generation conflict or the disintegration of extended family networks, indiscriminately affects the development of eating disorders and that girls in Asian countries, for example, are at risk as many are growing up in rapidly Westernizing urban centers or migrating to the West.

Sociocultural change includes westernization or modernization and urbanization.<sup>[54]</sup> Tsai<sup>[53]</sup> suggested that westernization or modernization is defined as "a historical shift driven by technological development in social and family structure where personal status is determined less by kinship and more by contractual and individualized roles. With greater geographical and social mobility and less ascription of identity through caste, kinship, or gender, greater value is placed on self-determination, achievement motivation and future orientation."

In Japan, some surveys were conducted to assess the effects of westernization.<sup>[55,56]</sup> Kuboki's survey of increasing anorexia nervosa during the period 1985-1992 indicated that the increased prevalence rate paralleled modernization in Japan.<sup>[22]</sup> Kiriike and colleagues<sup>[57]</sup> found that body mass index was decreased in females from 21.5 in 1960 to 20.5 in 1995. He suggested this phenomenon reflected the tendency of young females to diet and of their having employment.

The higher prevalence is also associated with urbanization or population density.<sup>[58]</sup> In Japan, Nadaoka<sup>[55]</sup> reported that most eating disorder patients came from medium-sized cities (population: 60,000 to 250,000) compared with small and rural districts. He also indicated that more anorexia nervosa sufferers were found in urban areas.

By contrast, a recent Iranian survey reported that women in Teheran who were more interested in Western culture were more likely to be satisfied with their body shape and suggests that the hypothesis of cultural effects on eating disorders may be limited.<sup>[28]</sup>

In the early 1990s, Lee<sup>[26]</sup> suggested that the reason there were so few anorexia sufferers in Hong Kong was that the Chinese were thinner, they did not admire thinness as beauty, obesity was thought to be a symbol of wealth, and there was no tendency of dieting among young girls. In 2001, Lee<sup>[59]</sup> interestingly reported that 3% to 10% of women in Hong Kong were suffering from some form of eating disorder. Lee also suggests that "fat phobia" was no longer bound to specific Western localities and instead may be conceived

as being grounded in the transnational culture of "modernity" characterized by an internationalized socioeconomic stratum now found in many rapidly urbanizing parts of the world. The results of a recent Fijian survey demonstrated that key indicators of disordered eating among Fijian adolescent girls were significantly more prevalent after exposure to television.<sup>[60]</sup>

In conclusion, a limited number of studies have been conducted in non-Western countries. However, survey findings indicate that the number of subjects with eating disorders or abnormal eating attitudes is increasing in non-Western countries. This may support the westernization hypothesis. It is important to understand how eating and body image problems present differently in different cultures and to identify potential risk factors for abnormal eating attitudes in order to determine the need for treatment, prevention, and education. Further studies are needed to document the prevalence of abnormal attitudes to eating and eating disorders in non-Western countries as well as Western countries.

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### Tables

**Table 1. Prevalence of Eating Disorders in Western Countries**

Country Studied (Year)	Sample	Prevalence of Anorexia	Prevalence of Bulimia	Author (Year of Publication)
USA	The residents of Rochester by the Mayo Clinic and the Olmsted Medical group	(Incidence)		Lucas et al (1999) <sup>[15]</sup>
(1935-1949)	Medical group			
	15-19 male	0.000082		
	15-19 female	0.000492		
	20-24 male	0.000077		

(1950-1959)	20-24 female	0.000111		
	15-19 male	0		
	15-19 female	0.000306		
	20-24 male	0		
(1960-1969)	20-24 female	0.00031		
	15-19 male	0		
	15-19 female	0.000679		
	20-24 male	0.000086		
(1970-1979)	20-24 female	0.000427		
	15-19 male	0.000095		
	15-19 female	0.000658		
	20-24 male	0		
(1980-1989)	20-24 female	0.000288		
	15-19 male	0.000091		
	15-19 female	0.001357		
	20-24 male	0.000042		
	20-24 female	0.000324		
USA (1982)	276 men		1.1%	Heatherton et al (1995) <sup>[20]</sup>
	625 women		7.2%	
Hungary (1989)	University students - number not given			Rathner et al (2001) <sup>[23]</sup>
	Male		0% to 0.8%	
	Female		1% to 1.3%	
USA (1990)	1152 students			Pemberton et al (1996) <sup>[21]</sup>
	Male		0.2%	
	Female		1.3%	
Germany (1990)	4285 adults			Westenhofer (2001) <sup>[24]</sup>
	Male		2.1%	
	Female		2.4%	

UK (1992)	519,900 adults (15-19 yrs)			Rooney et al (1995) <sup>[18]</sup>
	Total	0.02%		
	Female	0.1%		
USA (1992)	235 men		0.4%	Heatherton et al (1995) <sup>[20]</sup>
	564 women		5.1%	
Italy (1993)	517 female (11-20 yrs)	1.3%		Rathner (1993) <sup>[17]</sup>
Hungary (1994)	538 medical student			Tury et al (1994) <sup>[19]</sup>
	248 male		0%	
	290 female		0.3%	
France (1995)	447 women		0.7%	Basdevant et al (1995) <sup>[61]</sup>
Norway (1995)	517 girls (15-20 yrs)	2.6%	0.87%	Gotestam (1995) <sup>[16]</sup>
	19067 psychiatric outpatients			
	Male	0.8%	0.7%	
	Female	5.7%	7.3%	
Canada (1995)	8116 adults			Garfinkel et al (1995) <sup>[62]</sup>
	Male		0.1%	
	Female		1.1%	
Germany (1997)	4285 adults			Westenhofer (2001) <sup>[24]</sup>
	Male		1.1%	
	Female		1.6%	
Australia (1998)	4200 students(15 yrs)			Hay et al (1998) <sup>[63]</sup>
	Male and female		0.3%	
Austria (1998)	1000 adult females		1.3%	Kinzl et al (1999) <sup>[64]</sup>

**Table 2. Prevalence of Eating Disorders in Non-Western Countries**

<b>Country Studied (Year)</b>	<b>Sample</b>	<b>Prevalence of Anorexia</b>	<b>Prevalence of Bulimia</b>	<b>Author (Year of Publication)</b>
Malaysia (1981)	6000 psychiatric patients	0.05%		Buhrich (1989) <sup>[25]</sup>
Japan (1985)	732 hospitals			Kuboki et al (1996) <sup>[22]</sup>
	Male and female	0.0036%		
	Female	0.0063%		
Japan (1998)	456 women (18-21 yrs)		2.9%	Kiriike et al (1998) <sup>[57]</sup>
Hong Kong (1989)	500,000 adults	0.002%		Lee et al (1993) <sup>[29]</sup>
Hong Kong (1991)	1020 college students		0.46%	Lee et al (1993) <sup>[29]</sup>
Japan (1992)	732 hospitals			Kuboki et al (1996) <sup>[22]</sup>
	Male and female	0.0045%		
	Female	0.0097%		
Egypt (1994)	351 school girls		1.2%	Nassar (1994) <sup>[65]</sup>
Japan (1993)	259 students (15-18 yrs)			Suzuki et al (1995) <sup>[66]</sup>
	Male		0.7%	
	Female		1.9%	
Japan (1997)	130 hospitals and 1326 clinics (female)	0.0048%	0.01%	Nakamura et al (2000) <sup>[27]</sup>
Iran (2000)	3100 school girls (15-18 yrs)	0.9%	3.2%	Nobakht and Dezhkam (2000) <sup>[28]</sup>

**Table 3. The Reports of EAT-26 in Western Countries**

<b>Country Studied (Year)</b>	<b>Samples</b>	<b>Scores Above Cutoff</b>	<b>Scores Above Cutoff</b>	<b>Authors</b>
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		<b>Point (Male)</b>	<b>Point (Female)</b>	
Canada (1993)	181 female students (11-18 yrs)		14.2%	Leichner et al <sup>[39]</sup>
Canada (1994)	High school - number not given		14.1%	Leichner et al <sup>[39]</sup>
Switzerland (1996)	College students - number not given	1.5%	8.3%	Buddeberg-Ficher et al <sup>[34]</sup>
Poland (1996)	747 school girls (14-16 yrs)		11.5%	Wlodarczyk-Bisaga and Dolan <sup>[67]</sup>
Germany (1998) (EAT-40)	Public ballet school students - number not given		21.6%	Neumarker et al <sup>[40]</sup>
USA (1999)	College students	10%	20%	Nelson et al <sup>[68]</sup>
USA (2000)	865 college students		20.17%	Anstine et al <sup>[69]</sup>
Canada (2001)	1739 girls			Jones et al <sup>[35]</sup>
	12-14 yrs		13%	
	15-18 yrs		16%	
USA (2002)	College students - number not given	4%	10.9%	Hoerr et al <sup>[36]</sup>
Spain (2002)	1025 students (14-19 yrs)	0.4%	16.9%	Ballester et al <sup>[33]</sup>
UK (2002)	Female students - number not given			Szweda and Thorne <sup>[41]</sup>
	Medical		20%	
	Nursing		19%	
	Arts		21%	
USA (2003)	155 female (16-22 yrs)		26%	Graber et al <sup>[37]</sup>

**Table 4. The Report of EAT-26 in Non-Western Countries**

<b>Country Studied (Year)</b>	<b>Samples</b>	<b>Scores Above Cutoff Point (Male)</b>	<b>Scores Above Cutoff Point (Female)</b>	<b>Authors</b>
Nigeria (1992)	Female students - number not given			Oyewumi and Kazarian <sup>[42]</sup>
	High school		18.6%	
	College		9.1%	
	University		21.7%	
Hong Kong (1996)	Adult females - number not given		6.5%	Lee and Lee <sup>[47]</sup>
South Africa (1997)	High school - number not given			Szabo and Hollands <sup>[38]</sup>
	Black		37.5%	
	White		20.67%	
Korea (1998)	3062 subjects	8.5% (including female)	8.5% (including male)	Lee et al <sup>[48]</sup>
Japan (1999)	Numbers not given			Nakamura et al <sup>[44]</sup>
	In 20s		1.9%	
	In 30s		0.8%	
Japan (1999)	2685 high school students		5.4%	Nakamura et al <sup>[44]</sup>
Turkey (2000)	253 undergraduates		7.9%	Elal et al <sup>[70]</sup>
China (2000)	Medical students			Makino et al <sup>[46]</sup>
	217 male	6.0%		
	177 female		6.2%	
Japan (2000)	College students			Makino et al <sup>[46]</sup>
	3129 male	2.5%		
	2527 female		4.1%	
South Africa (2001)	228 high school		18.8%	Caradas et al <sup>[43]</sup>
Oman (2002)	Teenagers -	10.9%	13.7%	Al-Adawi et

	numbers not given			al <sup>[8]</sup>
Pakistan (2002)	Medical students - numbers not given			Babar et al <sup>[49]</sup>
	1st year		27.7%	
	2nd year		14.9%	
	3rd year		16%	
	4th year		21.3%	
	Nursing college students - number not given			
	1st year		39.5%	
	2nd year		26.7%	
	3rd year		31.4%	
4th year		2.4%		
Japan (2003)	High school students	2.4%	11.2%	Nishizawa et al <sup>[45]</sup>

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