Charles University in Prague
1st Medical Faculty

Doctoral thesis: Summary
Eating Disorders: Epidemiology and Risk Factors

PhDr. Barbara Pavlová

2008

Doktoral study programme
(Doktorský studijní program)

Charles University in Prague
(Univerzita Karlova v Praze)

Section, head of the section (Obor, předseda oborové rady): Medical Psychology and Psychopathology (Lékařská psychologie a psychopatologie), Prof. MUDr. Jiří Raboch, DrSc.

Department (školicí pracoviště): Department of Psychiatry, 1st Medical Faculty, Charles University in Prague (Psychiatrická klinika 1. lékařské fakulty Univerzity Karlovy v Praze

Author (autor): PhDr. Barbara Pavlová

Supervisor (školitel): MUDr Hana Papežová, CSc.

Examiners (oponenti):

This summary of a doctoral thesis was sent on....
(Autoreferát byl rozeslán dne....)

The viva will take place on..... at..... at.....
(Obhajoba se koná dne.....v.....hod. kde.....)

This thesis is available at the deanery of the 1st Medical Faculty, Charles University in Prague
(S disertací je možno se seznámit na děkanátě 1. lékařské fakulty Univerzity Karlovy.)

Table of contents:

Summary in Czech

Tato práce se zabývá epidemiologií and rizikovými faktory poruch příjmu potravy, se zaměřením na vliv politických a kulturních změn, jež se počátkem devadesátých let odehrály v České republice.

Termín poruchy příjmu potravy zahrnuje duševní poruchy charakterizované poruchami jídelního chování: mentální anorexii, mentální bulimii a další blíže nespecifikované poruchy příjmu potravy

Incidence mentální anorexie se zvyšovala do sedmdesátých let dvacátého století; incidence mentální bulimie až do konce devadesátých let dvacátého století. Tyto údaje pocházejí ze západních zemí; epidemiologických dat ze střední a východní Evropy se nedostává.

Poruchy příjmu potravy mají multifaktoriální etiologii. Nedávno se v souvislosti s poruchami příjmu potravy zacalo diskutovat i o zažitcích migrace a akulturace.

Hlavní hypotézou této prace je, že prevalence and incidence poruch příjmu potravy v České republice vzrostla v devadesátých letech dvacátého století. Kvalitativní část této práce se zabývá zážitky migrace a akulturace a jejich vlivem na poruchy příjmu potravy.

První článek ukazuje, že ve skupině žen 10-39 let stoupl počet hospitalizací pro poruchy příjmu potravy čtyřikrát mezi lety 1981 a 2001 a zůstal na stejné úrovni až do roku 2005. Druhý článek se zabývá prvními hospitalizacemi pro mentální anorexii, jakožto aproximací incidence této poruchy: U žen ve věku 10-39 let stoupl počet prvohospitalizací pro mentální anorexii z 4,5/100 000 v roce 1994 na 7,5/100 000 v roce 1999 a zůstal stabilní do roku 2005. Třetí článek je kvalitativní explorací faktorů spojených se zážitky migrace a prezentuje tři trajektorie spojující poruchy příjmu potravy se životem v zahraničí (iniciální příbyek na váze asociovaný s následným propuknutím poruchy příjmu potravy, počátek nebo zhoršení onemocnění za doby pobytu v zahraničí a život v zahraničí jako pokus uniknout již existující poruše příjmu potravy. Rizika spojená s pobytem v zahraničí zahrnovala odlišné jídlo a staravovací návyky, negativní emoce a nemoc jako pokus dosáhnout něčeho hodnotného.

Souhrnem, časová asociace mezi nárustem počtu hospitalizací pro poruchy příjmu potravy s politickými změnami v České republice nasvědčuje etiologické roli ‘pozápadněného’ prostředí. Nárust počtu hospitalizací pro mentální anorexii nesouhlasí se zprávami o stabilní incidenci ze západní Evropy a je argumentem pro kulturní podmíněnost mentální anorexie. Výjezdy do zahraničí mohou být jedním z rizikových faktorů; tento fenomén je třeba dále prozkoumat v epidemiologické studii.

Summary in English

This thesis explores the epidemiology and risk factors of eating disorders. It focuses on the impact of the political and cultural changes that occured in the Czech Republic in the early 1990s.

The term eating disorders includes mental illnesses characterized by disturbances in eating behaviour: anorexia nervosa, bulimia nervosa and various eating disorders not otherwise specifieed.

It appears that the incidence of anorexia nervosa was increasing until 1970s and remains stable since. The incidence of bulimia nervosa was rising until the end of 1990s. However, the data come from the western countries only. The epiemiological data from the Central and Eastern Europe region remain sparse.

Eating disorders have multifactorial aetiology; which includes the recently emerging factors related to migration and acculatuation.

Therefore, we hypothesised that the prevalence and incidence of eating disorders in the Czech Repulic rose in the 1990s and that factors associated with migration experiences may play a role in the development and maintenance of eating disorders.

This thesis contains three different papers exploring different aspects of this hypothesis.

The first paper shows that the number of hospital admissions for eating disorders in females aged 10-39 quadrupled between 1981 and 2001, and remained high till 2005. The second paper concentrates on the first admissions for anorexia nervosa, as an approximation of an incidence of this condition: The rate of first-time admissions for anorexia nervosa in females aged 10-39 increased from 4.5/100,000 in 1994 to a maximum of 7.5/100,000 in 1999 and remained stable till 2005. The third paper, an in-depth qualitative exploration of factors associated with migration experiences, revealed three trajectories connecting eating disorders and living abroad, including weight-gain associated with later development of an eating disorder; development or worsening of an eating disorder when abroad; and stay abroad as an attempt to escape the illness. Possible risk factors related to such soujourns include

different food and eating habits; negative emotions; and illness as attempt to achieve something valuable.

In conclusion, temporal association of an increase in admissions for eating disorders is consistent with an aetiological role of a ‘westernised’ environment. The increase in first-time admissions for anorexia nervosa contrasts with the reports of stable incidence from the western countries and suggests that risk of anorexia nervosa is culture-dependent. One of the many factors that may be instrumental in such increase may be soujourns abroad; the importance of this phenomenon needs to be estimated in an epidemiological study.

1. Introduction

This thesis explores epidemiology and risk factors for eating disorder. Its central aim is to describe the epidemiology of eating disorders in the Czech Republic before and after the Velvet Revolution and to discuss possible explanation for any changes with a specific focus on experiences related to migration and acculturation as one of the possible risk factors for eating disorders.

2. Background

2.1. Eating disorders: classification

'Eating disorders' is an umbrella term for illnesses that are characterized by 'disturbances in eating behaviour' (American Psychiatric Association, 2000). There are minor differences in the classification of eating disorders in DSM IV, Diagnostic and Statistical Manual of Mental Disorders, fourth edition (American Psychiatric Association, 2000), and ICD-10, International Classification of Diseases, tenth edition (World Health Organization, 1992). However, they both retain anorexia nervosa (AN) and bulimia nervosa (BN) as the two main types of eating disorders. The eating disorders that do not fulfil criteria for either, but are clinically significant, fall into the 'eating disorder not otherwise specified (EDNOS)' category in the DSM IV and are divided into more categories in the ICD 10.

2.2. Why do eating disorders matter?

Eating disorders cause significant morbidity and mortality in young women (Nielsen, 2001) and are often considered a therapeutic challenge.

2.3. Eating disorders: epidemiology

Epidemiological studies yield different incidence and prevalence rates depending on the method used.

2.3.1. Epidemiology of eating disorders in Western Europe and the USA

Anorexia nervosa

Estimates of AN lifetime prevalence from population studies from Western Europe and the USA range between 0.5-2.2% for women (Favaro *et al*, 2003; Garfinkel *et al*, 1996; Hudson *et al*, 2007; Keski-Rahkonen *et al*, 2007; Walters and Kendler, 1995). Estimates based on registers tend to be lower. Men account for 10-25% of cases, with numbers close to 10% being more usual (Hoek and van Hoeken, 2003). General practice studies show an incidence rate of AN around 5/100,000 (Currin *et al*, 2005; van Sonn *et al*, 2006). It appears that in the Western Europe, the incidence of AN increased until 1970s and remained stable since (Hoek and van Hoeken, 2003). The incidence rates in the USA might have been increasing until the end of 1980s (Hoek, 2006). Nevertheless, isolated reports suggest that AN might be increasing among specific age groups (van Sonn et al, 2006). The peak age of onset of AN is 15-19 years (Lucas et al, 1991; Turnbull et al, 1996).

Bulimia nervosa

The estimates of lifetime prevalence of BN in women in North America and Europe range between 1.1 -4.6% (Garfinkel *et al*, 1995; Hudson et al, 2007; Kendler *et al*, 1991; Bushnell *et al*, 1990). Prevalence rates of BN for men are considerably lower than those for women (Bushnell et al, 1990; Garfinkel et al, 1995). Recent general practice register based studies from the Netherlands (van Sonn et al, 2006) and the United Kingdom (Currin et al, 2005) showed similar incidence rates 6.1/100,000 (1995-1999) and 6.6/100,000 (2000) respectively. Primary care based studies in Great Britain (Currin et al, 2005; Turnbull et al, 1996) showed a threefold increase in the incidence of bulimia nervosa between 1988 and 1997 and subsequent stagnation. An average age of onset of BN is 20-39 (Turnbull et al, 1996).

Eating disorders not otherwise specified

The prevalence rates of eating disorders not otherwise specified (EDNOS) range between 0.6%-5.4% for females (Favaro et al, 2003; Hudson et al,

2007; Kinzl *et al*, 1999; Whitehouse *et al*, 1992) 0.8%-2% for males (Kinzl et al, 1999; Hudson et al, 2007) .

Abnormal eating attitudes and behaviour

A metaanalysis of self-report studies on eating behaviour (Fairburn and Beglin, 1990) estimated a prevalence of dieting to be over 25%, binge eating (at least once a week) 15.7%, self-induced vomiting (at least weekly) 2.4% and laxative misuse (at least weekly) 2.7%. In females, the peak age of onset of binge eating and purging occurs at age 16 and 18 respectively.

2.3.2. Epidemiology of eating disorders in non-western countries

Eating disorders are not exclusively western syndromes and appear throughout the world (Bennett *et al*, 2004; Eddy *et al*, 2007; Le Grange *et al*, 1998). One possible explanation of this phenomenon is westernization (Becker *et al*, 2002). Acculturative stress may also play a role in the aetiology of eating disorders (Hoek *et al*, 2005; Katzman *et al*, 2004).

2.3.3. Epidemiology of eating disorders in Central and Eastern Europe

Although an isolated study (Rathner et al, 1995) suggests that the prevalence of eating disorders in Central and Eastern Europe prior to 1989 might have been comparable to western countries, the true extent of the problem remains unknown. Large-scale epidemiological studies are still missing in Central and Eastern Europe. Moreover, there are literally no incidence studies in this region.

2.4. Risk factors

2.4.1 What is a risk factor?

Risk factor is a characteristics or an event which presence heightens the risk of a particular disorder (Kazdin *et al*, 1997).

2.4.2. Demographic variables

Sex

Women become unwell with AN or BN ten times more often than men (Hsu, 2004; Wittchen *et al*, 1998) and binge eating was shown to be 2.5 times more common in men than women (Spitzer *et al*, 1992).

Age

The onset of eating disorders is most often in adolescence and early adulthood (Hoek and van Hoeken, 2003; Stice, 2002; Wittchen et al, 1998). and appears to be lower for AN than for BN (Currin et al, 2005; Turnbull et al, 1996). Similarly, subclinical eating problems increase during puberty (Bulik, 2002).

Ethnicity

Eating disorders have often been viewed as a disease of white middle-class females. As is apparent from the section on eating disorders among non-western nations, this opinion has been largely abandoned (Shaw *et al*, 2004).

Urbanicity

Hoek at al (Hoek et al, 1995) found higher incidence rates of BN (but not AN) in urbanized than in rural areas. This was confirmed by a later study (van Sonn et al, 2006).

2.4.3. Personality factors

Impulsivity

Although a strong association of eating disorders with conditions like substance misuse or borderline personality disorder (Zanarini *et al*, 1998) would suggest that eating disorders are associated with impulsivity, other studies do not support this (Wonderlich *et al*, 2004).

Perfectionism

Perfectionist traits are characteristic not only of AN sufferers (Halmi *et al*, 2000), but also for BN sufferers and people who have recovered from their eating disorder (Fairburn *et al*, 1997; Fairburn *et al*, 1998; Fairburn *et al*, 1999). Perfectionism is also a prospective risk for AN and BN (Bulik *et al*, 2003).

Neuroticism

Neuroticism is a prospective predictor of later development of AN (Bulik et al, 2006). However, neuroticism might be also a trait connected to psychopathology in general, not exclusively to eating disorders.

2.4.4. Life events

Quantity

It appears that the difference between healthy people and people with eating disorders is not whether they experienced a negative life event (Schmidt *et al*, 1997a; Troop and Treasure, 1997) , but whether they experienced more than one (Hoersh *et al*, 1995; Schmidt *et al*, 1997b). However, people with eating disorders experienced a number of negative life events comparable to people with other psychiatric diagnoses.

Event type

Schmidt et al (1997a) found that when compared to BN sufferers, negative life events of people with AN threatened their chastity more often. It has been also suggested that the onset of AN is preceded by chronic family problems (Gowers et al, 1996; Hoersh et al, 1995).

Sexual abuse is a risk factor for eating disorders (Waller *et al*, 1993; Wonderlich *et al*, 2001), but also a risk factor for number of other psychiatric disorders. (Hoersh et al, 1995; Webster and Palmer, 2000). The experiences of separation from one's original family have been also suggested to play a role in the development of eating disorders (Marsden, 1997).

2.4.5. Negative emotionality

Negative emotionality is a risk factor for eating problems, but also a causal risk factor for binge eating (Stice, 2002). However, negative emotionality is a risk factor for a wide range of disorders and therefore it is not a specific risk factor for eating disorders. (Jacobi *et al*, 2004).

2.4.6 Body & weight: Are diets to blame?

Body mass index

Retrospective studies show that, compared to psychiatric patients, people suffering from BN and BED were more often obese in childhood. Even though high body mass index (BMI) predicts dissatisfaction with own body (Cattarin and Thompson, 1994; Field *et al*, 2001), many studies did not confirm association between BMI or percentage of body fat and eating disorders. (Patton *et al*, 1999; Killen *et al*, 1996).

Dieting

It has been described that BN is often preceded by a weight loss. It is difficult to assess influence of dieting on onset of AN, as it is unclear where dieting ends and the illness starts.

2.4.7. Cultural influences

Western culture has been repeatedly blamed for the epidemics of eating disorders in the 20th century. But does exposure to thin models and diet food adverts increase the risk of eating disorders? A metaanalysis (Groesz *et al*, 2002) showed that body dissatisfaction rises following the exposure to pictures of ideal bodies. Peer influence has also been shown to play a role in body dis/satisfaction and eating behaviours (Lieberman *et al*, 2001; Stice *et al*, 2003; Wertheim *et al*, 1997). The notion of eating disorders as culture bound syndromes was reappraised towards the end of the last century with a widespread view that while BN was a culture bound syndrome, AN is culture independent (Keel and Klump, 2003). This view is supported by data from epidemiological studies that show stable incidence of AN in times of increasing incidence of BN (Currin et al, 2005). Nevertheless, cross-cultural research (Hoek et al, 2005; Katzman et al, 2004) suggests otherwise.

In summary, the extent of the role cultural influences play in the onset and maintenance of eating disorders is unclear and studies from cultures in transitions might help to disentangle this complex relationship.

2.4.8. Biological factors

Genes

Twin studies estimate heritability around 0.5 (Bulik *et al*, 2000) for bulimia nervosa and 0.56 for bulimia nervosa (Bulik et al, 2006). In summary, there is a similar influence of genetic and environmental factors on eating disorders.

Prenatal and perinatal complications

Premature birth has been shown to increase the risk of AN up to three times. Birth complications are risk factors for both, AN and BN (Foley *et al*, 2001; Cnattingius *et al*, 1999). Nevertheless, pre- and perinatal complications also increase risk of other psychiatric disorders, e.g., schizophrenia (Jacobi et al, 2004).

Early menarche

The relationship between early menarche and eating disorders has been confirmed by some (Hayward *et al*, 1997; Wichstrom, 2000), but not all (Graber *et al*, 1994; Smolak *et al*, 1993) studies.

3. Paper 1

Time trends in hospital admissions for eating disorders in the Czech Republic 1981-2005

Barbara Pavlova, M.A., Rudolf Uher, M.D., Ph.D, Eva Dragomirecka, Ph.D., & Hana Papezova, M.D., Ph.D.

Preliminary results were reported at the International Eating Disorders Conference in Prague in March 2007. They were also mentioned at the 8th London International Eating Disorders Conference in London in March 2007.

This paper is currently under review.

Background: Socio-cultural factors may play a role in the aetiology of eating disorders.

Aims: To test the hypothesis that the socio-cultural transition which occurred in the 1990's in Central and Eastern Europe was associated with an increase in hospital admissions for eating disorders.

Method: All cases of ICD-9 and ICD-10 defined eating disorders were retrieved from the Czech Republic national register of hospital admissions for the years 1981, 1986 and 1992-2005. Age and sex adjusted admission rates (per 100,000) were calculated and time trends were tested by Poisson regression.

Results: The admission rate for eating disorders in females aged 10-39 quadrupled from 2.6 (95%CI 2.1-3.0) in 1981 to a maximum of 10.6 (95%CI 9.8-11.5) in 2001, and remained elevated till 2005.

Conclusions: Temporal association of a marked increase in admissions for eating disorders with socio-cultural transition is consistent with an aetiological role of a ‘westernised’ environment.

4. Paper 2

Time trends in hospital admissions for anorexia nervosa in the Czech Republic 1994-2005

Barbara Pavlova, M.A., Rudolf Uher, Ph.D, Eva Dragomirecka, Ph.D, & Hana Papezova, M.D., Ph.D.

Preliminary results were reported at the International Eating Disorders Conference in Prague in March 2007 and published as an abstract. They were also mentioned at the 8th London International Eating Disorders Conference in London in March 2007.

This paper is currently under review.

Background: The role of socio-cultural factors in the aetiology of anorexia nervosa is disputable.

Aim: To test the hypothesis that socio-cultural changes in the 1990's in Central and Eastern Europe were associated with an increase in first-time hospital admissions for anorexia nervosa.

Method: All first admissions for the ICD-10 anorexia nervosa were retrieved from the Czech Republic national register for 1994-2005. Age and sex adjusted rates (per 100,000) were calculated and time trends were tested by Poisson regression.

Results: The rate of first-time admissions for anorexia nervosa in females aged 10-39 increased from 4.5 (95%CI 3.6-5.4) in 1994 to a maximum of 7.5 (95%CI 6.3-8.6) in 1999, followed by a non-significant decrease to 6.4 (95%CI 5.3-7.4) in 2005.

Conclusions: The observed increase contrasts with reports of stable incidence from Western countries and suggests that risk of anorexia nervosa is culture-dependent.

5. Paper 3

It would not have happened to me at home: Qualitative exploration of sojourns abroad and eating disorders in young Czech women

European Eating Disorders Review In press

Barbara Pavlova, Rudolf Uher & Hana Papezova

Preliminary results were reported at the International Eating Disorders Conference in Prague in March 2007. They were also mentioned at the 2nd Annual International Mental Health Conference in London in August 2005.

Background: Eating disorders can be triggered by life events involving migration and acculturation.
Aim: To explore associations between sojourns abroad and the onset and course of eating disorders.
Method: Six semi-structured interviews with women with an eating disorder and history of sojourn abroad and seven first-person Internet testimonies were analysed using interpretative phenomenological analysis.
Results: We identified three trajectories relating eating disorders to sojourns abroad: I. weight-gain when abroad associated with later development of an eating disorder; II. development or worsening of an eating disorder when abroad; III. stay abroad as an attempt to escape the illness. Three topics informed on the impact of sojourns abroad on mental health: A) different food and eating habits; B) negative emotions; C) illness as attempt to achieve something valuable.

Conclusion: The importance of the identified trajectories and topics relating eating disorders to sojourns abroad needs to be estimated in an epidemiological study.

6. Discussion

This thesis comprises three different papers. The first two are large-scale epidemiological studies that include the whole population of the Czech Republic. The last paper uses qualitative methodology and explores association between long-term stays abroad and disordered eating.
Summary of the results is presented below.

6.1. Summary

1. The hospital admission rate for eating disorders in females aged 10-39 quadrupled from 2.6 (95%CI 2.1-3.0) in 1981 to a maximum of 10.6 (95%CI 9.8-11.5) in 2001, and remained elevated till 2005. Temporal association of a marked increase in admissions for eating disorders with socio-cultural transition is consistent with an aetiological role of a 'westernised' environment.

2. The rate of first-time admissions for anorexia nervosa in females aged 10-39 increased from 4.5 (95%CI 3.6-5.4) in 1994 to a maximum of 7.5 (95%CI 6.3-8.6) in 1999, followed by a non-significant decrease to 6.4 (95%CI 5.3-7.4) in 2005. The trend in the incidence of clinically significant anorexia nervosa was paralleled by an increased rate of first-time admissions for bulimia nervosa. The observed increase in the incidence of clinically significant anorexia nervosa contrasts with reports of stable incidence from Western countries and suggests that risk of anorexia nervosa is culture-dependent.

3. Young women with eating disorders report that their long-term stay abroad contributed to the onset or worsening of their eating disorder. They describe three different trajectories into the illness: In some the stay abroad was associated with initial weight gain, dieting and subsequent development of an eating disorder. Other report development or worsening of an eating disorder

without the initial weight gain. Lastly, for some women the stay abroad was meant to serve as an escape from their eating disorder, but worked as an exacerbation. Mechanisms of the eating disorder development/worsening included different food and eating habits, negative emotions and illness as attempt to achieve something valuable

6.2. Future directions

1. Cultural factors appear to be associated with eating disorders, including anorexia nervosa. A large-scale prospective population study in a country undergoing socio-cultural transition is needed to further explore this finding to establish whether it generalizes to other settings (primary care, two-stage screening studies).

2. The importance of acculturation and migration experiences in the development and maintenance of eating disorders needs to be established in a longitudinal prospective study.

7. Author's publications

Uher, R., Dragomirecka, E., Papezova, H., **Pavlova B** (*2006)* Use of socioeconomic status in health research [Comment. Letter] *JAMA. 295(15):1770.*

Uher, R., **Pavlova, B.**, Papežová, H., Probst, M., Yamamotová, A. (2004). Vztah k vlastnímu telu a somatoformní disociace u poruch príjmu potravy . *Ceskoslovenská psychologie, 48, 5, 385-396 .*

Pavlova,B., Uher,R., Papezova,H. (In Press, Published Online: 20 Aug 2007). European Eating Disorders Review (DOI: 10.1002/erv.819)

Pavlova, B., Uher, R., Dragomirecka, E., Papezova,H. (2007) Time trends in hospital admissions for anorexia nervosa in the Czech Republic 1994-2005. Submitted.

Pavlova, B., Uher, R., Dragomirecka, E., Papezova,H. (2007) Time trends in hospital admissions for eating disorders in the Czech Republic 1981-2005. Submitted.

8. Reference list

1. American Psychiatric Association (2000) Diagnostic and Statistical Manual of Mental Disorders (4th edition, text revision). Washington, D.C.: American Psychiatric Association.

2. Becker, A. E., Burwell, R. A., Gilman, S. E., et al (2002) Eating behaviour and attitudes following prolonged exposure to television among ethnic Fijian adolescent girls. British Journal of Psychiatry, 180, 509-514.

3. Bennett, D., Sharpe, M., Freeman, C., et al (2004) Anorexia nervosa among female secondary school students in Ghana. British Journal of Psychiatry, 185, 312-317.

4. Bulik, C. M. (2002) Eating disorders in adolescents and young adults. Child and Adolescent Psychiatric Clinics, 11, 201-218.

5. Bulik, C. M., Sullivan, P. F., Tozzi, F., et al (2006) Prevalence, heritability, and prospective risk factors for anorexia nervosa. Archives of General Psychiatry, 63, 305-312.

6. Bulik, C. M., Sullivan, P. F., Wade, T. D., et al (2000) Twin studies of eating disorders: a review. Int.J.Eat.Disord., 27, 1-20.

7. Bulik, C. M., Tozzi, F., Anderson, C., et al (2003) The relation between eating disorders and components of perfectionism. American Journal of Psychiatry, 160, 366-368.

8. Bushnell, J. A., Wells, J. E., Hornblow, A. R., et al (1990) Prevalence of three bulimia syndromes in the general population. Psychological Medicine, 20, 671-680.

9. Cattarin, J. and Thompson, J. K. (1994) A three-year longitudinal study of body image and eating disturbance in adolescent females. Eating Disorders: The Journal of Prevention and Treatment, 2, 114-125.

10. Cnattingius, S., Hultman, C. M., Dahl, M., et al (1999) Very Preterm Birth, Birth Trauma, and the Risk of Anorexia Nervosa Among Girls . Arch Gen Psychiatry, 56, 634-638.

11. Currin, L., Schmidt, U., Treasure, J., et al (2005) Time trends in eating disorder incidence. British Journal of Psychiatry, 186, 132-135.

12. Eddy, K. T., Hennessey, M., and Thompson-Brenner, H. (2007) Eating pathology in East African Women. The Journal of Nervous and Mental Disease, 195, 196-202.

13. Fairburn, C. and Beglin, S. J. (1990) Studies of the epidemiology of bulimia nervosa. American Journal of Psychiatry, 47, 401-408.

14. Fairburn, C. G., Cooper, Z., Doll, H. A., et al (1999) Risk factors for anorexia nervosa: three integrated case-control comparisons. Arch.Gen.Psychiatry, 56, 468-476.

15. Fairburn, C. G., Doll, H. A., Welch, S. L., et al (1998) Risk factors for binge eating disorder: a community-based, case-control study. Arch.Gen.Psychiatry, 55, 425-432.

16. Fairburn, C. G., Welch, S. L., Doll, H. A., et al (1997) Risk factors for bulimia nervosa. A community-based case-control study. Arch.Gen.Psychiatry, 54, 509-517.

17. Favaro, A., Ferrara, S., and Santonastaso, P. (2003) The spectrum of eating disorders in young women: a prevalence study in a general population sample. Psychosom.Med., 65, 701-708.

18. Field, A. E., Camargo, C. A., Taylor, C. B., et al (2001) Peer, parent, and media influences on the development of weight concerns and frequent dieting among preadolescent and adolescent girls and boys. Pediatrics, 107, 54-60.

19. Foley, D. L., Thacker, L. R., Aggen, S. H., et al (2001) Pregnancy and perinatal complications associated with risks for common psychiatric disorders in a population-based sample of female twins. Am.J.Med.Genet., 105, 426-431.

20. Garfinkel, P. E., Lin, E., Goering, C., et al (1996) Should amenorrhea be necessary for the diagnosis of anorexia nervosa? Evidence from a Canadian community sample. British Journal of Psychiatry, 168, 500-506.

21. Garfinkel, P. E., Lin, E., Goering, P., et al (1995) Bulimia nervosa in a Candadian community sample: Prevalence and comparison of subgroups. American Journal of Psychiatry, 152, 1052-1058.

22. Gowers, S. G., North, C. D., Byram, V., et al (1996) Life event precipitants of adolescent anorexia nervosa. J Child Psychol.Psychiatry, 37, 469-477.

23. Graber, J. A., Brooks-Gunn, J., Paikoff, R. L., et al (1994) Prediction of Eating Problems: An 8-Year Study of Adolescent Girls. Developmental Psychology, 30, 823-834.

24. Groesz, L. M., Levine, M. P., and Murnen, S. K. (2002) The effect of experimental presentation of thin media images on body satisfaction: a meta-analytic review. International Journal of Eating Disorders, 31, 1-16.

25. Halmi, K. A., Sunday, S. R., Strober, M., et al (2000) Perfectionism in anorexia nervosa: variation by clinical subtype, obsessionality, and

pathological eating behavior. American Journal of Psychiatry, 157, 1799-1805.

26. Hayward, C., Killen, J. D., Wilson, D. M., et al (1997) Psychiatric risk associated with early puberty in adolescent girls. J.Am.Acad.Child Adolesc.Psychiatry, 36, 255-262.

27. Hoek, H. W. (2006) Incidence, prevalence and mortality of anorexia nervosa and other eating disorders. Current Opinions in Psychiatry, 19, 389-394.

28. Hoek, H. W., Bartelds, A. I. M., Bosveld, J. J. F., et al (1995) Impact of urbanization on detection rates of eating disorders. American Journal of Psychiatry, 152, 1272-1278.

29. Hoek, H. W., van Harten, P. N., Hermans, K. M., et al (2005) The incidence of anorexia nervosa on Curacao. American Journal of Psychiatry, 162, 748-752.

30. Hoek, H. W. and van Hoeken, D. (2003) Review of the prevalence and incidence of eating disorders. International Journal of Eating Disorders, 34, 383-396.

31. Hoersh, N., Apter, A., Lepkifker, E., et al (1995) Life events and severe anorexia nervosa in adolescence. Acta Psychiatr.Scand., 91, 5-9.

32. Hsu, L. K. (2004) Epidemiology of the Eating Disorders. pp. 681-700.

33. Hudson, J. I., Hirpi, E., Pope Jr., H. G., et al (2007) The Prevalence and Correlates of Eating Disorders in the National Comorbidity Survey Replication. Biological Psychiatry, 61, 348-358.

34. Jacobi, C., Hayward, C., de Zwaan, M., et al (2004) Coming to terms with risk factors for eating disorders: application of risk terminology and suggestions for a general taxonomy. Psychol.Bull., 130, 19-65.

35. Katzman, M. A., Hermans, K. M. E., van Hoeken, D., et al (2004) Not your "typical island woman": anorexia nervosa is reported only in subcultures on Curaçao. Culture, Medicine and Psychiatry, 28, 463-492.

36. Kazdin, A. E., Kraemer, H. C., Kessler, R. C., et al (1997) Contributions of risk-factor research to developmental psychopathology. Clin.Psychol.Rev., 17, 375-406.

37. Keel, P. K. and Klump, K. L. (2003) Are eating disorders culture-bound syndromes? Implications for conceptualizing their etiology. Psychological Bulletin, 129, 747-769.

38. Kendler, K. S., MacLean, C., Neale, M., et al (1991) The genetic epidemiology of bulimia nervosa. American Journal of Psychiatry, 148, 1627-1637.

39. Keski-Rahkonen, A., Hoek, H. W., Susser, E. S., et al (2007) Epidemiology and course of anorexia nervosa in community. American Journal of Psychiatry, 164, 1259-1265.

40. Killen, J. D., Taylor, C. B., Hayward, C., et al (1996) Weight concerns influence the development of eating disorders: a 4-year prospective study. J.Consult Clin.Psychol., 64, 936-940.

41. Kinzl, J. F., Traweger, C., Trefalt, E., et al (1999) Binge eating disorder in females: a population based investigation. International Journal of Eating Disorders, 25, 287-292.

42. Le Grange, D., Telch, C. F., and Tibbs, J. (1998) Eating Attitudes and Behaviors in 1,435 South African Caucasian and Non-Caucasian College Students. American Journal of Psychiatry, 155, 250-254.

43. Lieberman, M., Gauvin, L., Bukowski, W. M., et al (2001) Interpersonal influence and disordered eating behaviours in adolescent girls: The role of peer modeling, social reinforcement, and body-related teasing. Eating Behaviors, 2, 215-236.

44. Lucas, A. R., Beard, C. M., O'Fallon, W. M., et al (1991) 50-year trends in the incidence of anorexia nervosa in Rochester, Minn.: a population-based study. American Journal of Psychiatry, 148, 917-922.

45. Nielsen, S. (2001) Epidemiology and mortality of eating disorders. Psychiatric Clinics of North America, 24, 201-214.

46. Patton, G. C., Selzer, R., Coffey, C., et al (1999) Onset of adolescent eating disorders: population based cohort study over 3 years. BMJ, 318, 765-768.

47. Rathner, G., Tury, F., Szabo, P., et al (1995) Prevalence of eating disorders and minor psychiatric morbidity in Central Europe before the political changes in 1989: A cross-cultural study. Psychological Medicine, 25, 1027-1035.

48. Schmidt, U., Tiller, J., Blanchard, M., et al (1997a) Is there a specific trauma precipitating anorexia nervosa? pp. 523-530.

49. ----- (1997b) Is there a specific trauma precipitating anorexia nervosa? pp. 523-530.

50. Shaw, H., Ramirez, L., Trost, A., et al (2004) Body image and eating disturbances across ethnic groups: more similarities than differences. Psychol.Addict.Behav., 18, 12-18.

51. Smolak, L., Levine, M. P., and Gralen, S. (1993) The impact of puberty and dating on eating problems among middle school girls. Journal of Youth & Adolescence, 22, 355-368.

52. Spitzer, R. L., Devlin, M., Walsh, B. T., et al (1992) Binge-eating disorder: A multisite field trial of the diagnostic criteria. Int.J Eat.Disord, 11, 191-203.

53. Stice, E. (2002) Risk and maintenance factors for eating pathology: a meta-analytic review. Psychol.Bull., 128, 825-848.

54. Stice, E., Maxfield, J., and Wells, T. (2003) Adverse effects of social pressure to be thin on young women: An experimental investigation of the effects of "fat talk". Int.J Eat.Disord., 34, 108-117.

55. Troop, N. A. and Treasure, J. L. (1997) Psychosocial factors in the onset of eating disorders: responses to life-events and difficulties. Br.J Med.Psychol., 70 (Pt 4), 373-385.

56. Turnbull, S., Ward, A., Treasure, J., et al (1996) The demand for eating disorder care. An epidemiological study using the general practice research database. British Journal of Psychiatry, 169, 705-712.

57. van Sonn, G., van Hoeken, D., Bartelds, A. I. M., et al (2006) Time trends in the incidence of eating disorders: A primary care study in Netherlands. International Journal of Eating Disorders, 39, 1-5.

58. Waller, G., Halek, C., and Crisp, A. H. (1993) Sexual abuse as a factor in anorexia nervosa: Evidence from two separate cases. J Psychosom.Res., 37, 873-879.

59. Walters, E. E. and Kendler, K. S. (1995) Anorexia nervosa and anorexic-like syndromes in a population based female twin sample. American Journal of Psychiatry, 152, 64-71.

60. Webster, J. J. and Palmer, R. L. (2000) The childhood and family background of women with clinical eating disorder: A comparison with women with major depression and women without psychiatric disorder. Psychol.Med., 30, 53-60.

61. Wertheim, E. H., Paxton, S. J., Schutz, H. K., et al (1997) Why do adolescent girls watch their weight? An interview study examining sociocultural pressures to be thin. Journal of Psychosomatic Research, 42, 345-355.

62. Whitehouse, A. M., Cooper, P. J., Vize, C. V., et al (1992) Prevalence of eating disorders in three cambridge general practices: hidden and conspicuous morbidity. British Journa of General Practice, 42, 57-60.

63. Wichstrom, L. (2000) Psychological and behavioral factors unpredictive of disordered eating: a prospective study of the general adolescent population in Norway. Int.J.Eat.Disord., 28, 33-42.

64. Wittchen, H. U., Nelson, C. B., and Lachner, G. (1998) Prevalence of mental disorders and psychosocial impairments in adolescents and young adults. Psychol.Med., 28, 109-126.

65. Wonderlich, S. A., Connolly, K. M., and Stice, E. (2004) Impulsivity as a risk factor for eating disorder behavior: Assessment implications with adolescents. Int.J Eat.Disord., 36, 172-182.

66. Wonderlich, S. A., Crosby, R. D., Mitchell, J. E., et al (2001) Eating Disturbance and Sexual Trauma in Childhood and Adulthood. Int.J Eat.Disord, 30, 401-412.

67. World Health Organization (1992) International Statistical Classification of Diseases and Related Health Problems, 10th revision. Geneva: World Health Organisation.

68. Zanarini, M. C., Frankenburg, F. R., Dubo, E. D., et al (1998) Axis I comorbidity of borderline personality disorder. Am J Psychiatry, 155, 1733-1739.