



Suicide and Eating Disorders

Epidemiology: Suicide is one of the major causes of premature death in eating disordered (ED) patients (Berkman et al, 2007; Bulik et al, 2008; Foulon et al, 2007; Pompili et al, 2006) and the dominant cause of death among ED patients who die from non-natural causes (Møller-Madsen et al, 1996). Harris and Barraclough (1997) reported the suicide mortality rate *among both anorexics and bulimics* to be 23 times higher than that of the general population, placing the rate of suicide among ED patients among the highest of all psychiatric disorders.

Sullivan (1995) derived a crude rate of mortality (5.9%) due to all causes of death for individuals with Anorexia Nervosa (AN). This author analyzed 38 studies in which the cause of death was specified (N=164), and found that 89 (54%) of the deaths could be attributed to complications of the eating disorder, 44 (27%) to suicide, and 31 (19%) to unknown or other causes.

The suicide mortality rate in people with AN is one of the highest of all psychiatric illnesses (Holm-Denoma et al, 2008; Kaye, 2008; Keel et al., 2003) with the risk of death by suicide in AN subjects calculated as high as 57 to 58 times the expected rate in similar age and gender populations (Herzog et al, 2000; Keel et al., 2003; Pompili

et al, 2006). Because of this extremely high rate of suicide, suicide is a more likely cause of death in a current AN sufferer than are complications from the disorder.

Nonfatal suicidal behaviors (**suicide attempts**), as one might expect, also occur at significantly elevated rates among these patients, with the lifetime prevalence of suicide attempt found to be as high as 26% (3-20% of AN patients and 25-35% of Bulimia Nervosa [BN] patients: Franko et al, 2006; Milos et al, 2004). In an earlier report Favaro et al (1997) found the rate of attempt to be lower, 13%. Bulik et al (2008) found that 16.9% of 432 AN patients (mean age = 30.4) had a history of suicide attempts with attempts being more common among purging AN patients (26.1%), binge eating patients (24.3%) and mixed AN/BN patients (21.2%) than among restricting subtypes (7.4%). Franko et al (2004) conducted a prospective study over 8.6 years and reported that 22% of AN and 11% of BN patients made a suicide attempt in this follow-up period. In a recent Belgian study (Vervaeke et al, 2008) of 342 AN patients, 38% were found to have suicide ideation and 10% to have histories of suicide attempt by the median age of 23 years, 7 months. The majority (62%) of patients reporting prior attempts reported making more than one. A history of suicide attempt is a significant risk factor for later completed suicide.

Can healthcare professionals make a difference? Healthcare professionals working with eating disorder (ED) patients can help prevent suicides and suicidal behaviors by these patients by, first, increasing their awareness of suicide risk among ED patients and, second, observing closely for risk factors associated with suicide and suicidal behaviors among ED patients, especially modifiable acute risk factors; and, third, implementing

interventions to reduce risk where and when found. In this regard, the antisuicidal properties of lithium should be considered, especially if ED presents comorbidly with a mood disorder; and the antisuicidal properties of Dialectical Behavior Therapy (DBT) should be considered, especially if ED presents comorbidly with borderline personality disorder.

Risk Factors:

Comorbidity. Among all types of ED patients, comorbidity increases the risk of suicide attempt. One of the most common comorbidities in these patients is *alcohol abuse* which has been correlated with death by suicide in AN patients (Herzog et al, 2000; Milos et al, 2004). Patients presenting with comorbid **mood disorders** and/or **cluster B personality disorders** have been found to be more likely to have a history of suicide attempt – as noted above, a significant risk factor for later completed suicide (Milos et al., 2004). Comorbid **anxiety and substance use** disorders have, also, been shown to increase risk (Apter, 1995; Franko et al, 2004). Higher levels of both state and trait anxiety have been noted to differentiate AN patients with (versus without) a history of suicide attempt (Vervae et al, 2008). AN patients, in particular, have been found to be more likely to report suicidal behavior if they had a comorbid panic disorder or post-traumatic stress disorder, substance use disorder, and any of the cluster B personality disorders (Pompili & Tatarelli, 2005).

Other **character traits and temperamental differences**, such as impulsivity, high persistence (perfectionism), low self-directedness (less responsible, resourceful), and high self-transcendence (spiritual acceptance) have been associated with greater

likelihood of suicide attempt among ED patients (Bulik et al, 1999). Favaro et al (2004) reported risk to be greater among ED patients with higher **cholesterol levels**. Similarly, Cavedini et al (2004) noted that ED patients with **greater impairment in decision-making skills** had more suicide risk.

Severity. The more severe the ED, the more likely a patient is to have a comorbid psychiatric disorder, **hopelessness, and suicidal ideation** (Miotto et al, 2003).

Subtypes and Risk Factors: Among the subtypes of anorexics, the **binge eating/purging subtype** (versus the restrictive subtype) presents a higher risk (Pryor et al, 1996). This binge eating/purging behavior has been linked to suicide attempt in several different studies on AN and BN (Bulik et al, 2008; Foulon et al, 2007; Milos et al, 200; Pryor et al, 1996). Foulon et al (2007) noted, in particular, that risk for suicide attempt was most associated with a subtype switch from restrictive to bingeing/purging type. Significantly fewer subjects with the restricting subtype of AN or the non-purging subtype of BN reported suicidal ideation and at least one attempt than those with binge-eating/purging subtype of AN or the purging subtype of BN (Milos et al., 2004).

Behavioral characteristics found to be significantly more in evidence among AN patients with histories of suicide attempt versus those with no history of attempt by Vervaet et al (2008) were: vomiting more than two times per week, use of laxatives more than two times per week, history of comorbid drug use, history of self harm, and history of compulsive buying.

What about BN patients? Much less conclusive information has been found in studies on BN; we have fewer follow-up studies for BN than for AN, thus limiting definitive conclusions as yet. Most clinical evidence supports the finding that BN has a significantly lower risk of suicide attempt than AN. Miotto et al (2003), for example, found a positive relationship between AN symptoms and suicidal ideation but no relationship between BN symptoms and suicidal ideation in adolescents once depression was controlled. This said, Fedorowicz et al (2004) reported higher rates of suicidality among BN patients. Nickel et al (2006) found a relationship between BN and suicidal behavior, with a history of suicide attempt correlating to childhood physical and/or sexual abuse, borderline personality disorder, and depression. Similarly, Favaro et al (2008) have reported child sexual abuse, Cluster B personality disorders, and low self-directedness to be associated with suicide attempts in BN patients.

Why is suicide risk greater among AN patients? Holm-Denoma et al (2008) theorize, based on a small sample of case reports, that because AN patients develop an habituation to pain through experiences of starvation and/or self-injury linked to the illness, they are more likely to use more lethal methods in their suicide attempts. That these patients are in poor medical and nutritional states does not fully account for their increased mortality from suicidal behaviors; they simply use suicide methods that are more likely to result in death. Apter and Wasserman (2007) hypothesize that weight loss in AN serves as self-medication for an underlying depression, with that depression being a significant and primary chronic risk factor for suicide.

Risk in Subsyndromal ED. Disordered eating, without the diagnosis of AN, BN, or Eating Disorder not Otherwise Specified, has also been linked to suicide attempt (Miotto et al, 2003). Disordered eating is commonly reported in women receiving psychiatric treatment after an act of self-injury. Furthermore, weight control behaviors, both mild and extreme (fasting, vomiting, meal skipping, etc.), have been positively associated with suicidal ideation and suicide attempt in a study of adolescent boys and girls (Crow et al, 2007). Thus, suicide risk may be increased in conditions where there is a self-perception of a weight problem. Crow et al (2007) additionally found that body dissatisfaction as indicated by the Body Attitudes Test was significantly correlated to suicide attempt, regardless of actual weight status. Self-assessments of weight status as underweight or overweight were significantly associated with suicidal ideation. Rodriguez-Cano et al (2006) reported that low body image esteem [*see linked report on **Suicide and Body Dysmorphic Disorder***] was related to increased probability of suicide attempt in the next two years among a community-longitudinal sample of Spanish 13 year-olds.

Acute Risk Factors for Suicide. A task force of internationally renowned clinical researchers convened by the American Association of Suicidology (cf. Rudd et al, 2006) has produced a list of empirically-validated warning signs for suicide, based on research focused on the 12 months prior to completed suicides. These have been captured by the acronym ***IS PATH WARM?*** as follows:

IS PATH WARM?

- **I** Ideation/threatened or communicated
- **S** Substance Abuse/excessive or increased

- **P** Purposeless/no reasons for living
- **A** Anxiety, Agitation/Insomnia
- **T** Trapped/feeling no way out
- **H** Hopelessness

- **W** Withdrawal from friends, family, society
- **A** Anger (uncontrolled)/rage/seeking revenge
- **R** Recklessness/risky acts - unthinking
- **M** Mood changes (dramatic)

Assessment Recommendations:

- Conduct a comprehensive psychiatric evaluation for comorbidity among all ED patients

- Routinely assess ED patients, especially those with comorbid disorders, for suicide ideation.

- Even when ideation is denied, routinely assess for the presence of other acute risk factors for suicide (IS PATH WARM?)

References

- Apter, A., Gotheif, D., Orbach, I., Weizman, R., Ratzoni, G., Har-Even, D., Tyano, S. (1995). Correlation of suicidal and violent behavior in different diagnostic categories in hospitalized adolescent patients. *Journal of the American Academy of Child and Adolescent Psychiatry*, 34(7), 912-918.
- Apter, A. & Wasserman, D. (2007). Suicide in psychiatric disorders during adolescence (pp. 3-18). In R. Tatarelli, M. Pompili & P. Girardi (Eds.). *Suicide in psychiatric disorders*. NY: Nova Science Publishers.
- Berkman, N. D., Lohr, K. N., & Bulik, C. M. (2007). Outcomes of eating disorders: A systematic review of the literature. *International Journal of Eating Disorders*, 40(4), 293-209.
- Bulik, C. M., Sullivan, P. F., & Joyce, P. R. (1999). Temperament, character and suicide attempts in anorexia nervosa, bulimia nervosa and major depression. *Acta Psychiatrica Scandinavica*, 100(1), 27-23.
- Bulik, C. M., Thornton, L., Pinheiro, K., Klump, K. L., Brandt, H., Crawford, S., Fichter, M. M., Halmi, K.A., Johnson, C., Kaplan, A. S., Mitchell, J., Nutzinger, D., Strober, M., Treasure, J., Woodside, D. B., Berrettini, W. H., Kaye, W. H. (2008). Suicide attempts in anorexia nervosa. *Journal of Psychosomatic Medicine*, 70(3), 378-383.
- Cavedini, P., Bassi, T., Ubbiali, A., Casolari, A., Giordani, S., Zorzi, C. & Bellodi, L. (2004). Neuropsychological investigation of decision-making in anorexia nervosa. *Psychiatry Research*, 127(3), 259-266.

- Crow, S., Eisenberg, M., Story, M., & Neumark-Sztainer, D. (2007). Suicidal behavior in adolescents: Relationship to weight status, weight control behaviors, and body dissatisfaction. *International Journal of Eating Disorders, 41*(1), 82-87.
- Favaro, A., Caregaro, L., DiPascoli, L., Brambilla, F. & Santonastaso, P. (2004). Total serum cholesterol and suicidality in anorexia nervosa. *Psychosomatic Medicine, 66*(4), 548-552.
- Favaro, A. & Santonastaso, P. (1997). Suicidality in eating disorders: Clinical and psychological correlates. *Acta Psychiatrica Scandanivica, 95*(6), 508-514.
- Favaro, A., Santonastaso, P., Monteleone, P., Bellodi, L., Mauri, M., Rotondo, A., Erzegovesi, S., & Maj, M. (2008). Self-injurious behavior and attempted suicide in purging bulimia nervosa: Associations with psychiatric comorbidity. *Journal of Affective Disorders, 105*(1-3), 285-289.
- Fedorowicz, V. J., Falissard, B., Foulon, C., Dardennes, R., Divac, S. M., Guelfi, J. D., & Rouillon, F. (2007). Factors associated with suicidal behaviors in a large French sample of inpatients with eating disorders. *International Journal of Eating Disorders, 40*(7), 589-595.
- Foulon, C., Guelfi, J. D., Kipman, A., Adès, J., Romo, L., Houdeyer, K., Marquez, S., Mouren, M. C., Rouillon, F., & Gorwood, P. (2007). Switching to the bingeing/purging subtype of anorexia nervosa is frequently associated with suicidal attempts. *European Psychiatry, 22*(8), 513-519.
- Franko, D. L. & Keel, P. K. (2006). Suicidality in eating disorders: Occurrence, correlates, and clinical implications. *Clinical Psychology Review, 26*(6), 769-782.

- Franko, D. L., Keel, P. K., Dorer, D. J., Blais, M. A., Delinsky, S. S., Eddy, K. T., Charat, V., Renn, R. & Herzog, D. B. (2004). What predicts suicide attempts in women with eating disorders? *Psychological Medicine*, 34(5), 843-853.
- Harris, E. C., & Barraclough, B. (1997). Suicide as an outcome for mental disorders: A meta-analysis. *British Journal of Psychiatry*, 170, 205–228.
- Herzog, D. B., Greenwood, D. N., Dorer, D. J., Flores, A. T., Ekeblad, E. R., Richards, A., Blais, M. A., & Keller, M. B. (2000). Mortality in eating disorders: A descriptive study. *International Journal of Eating Disorders*, 28(1), 20-26.
- Holm-Denoma, J. M., Witte, T. K., Gordon, K. G., Herzog, D. B., Franko, D. L., Fichter, M., Quadflieg, M., & Joiner, T. E., Jr. (2008). Death by suicide among individuals with anorexia as arbiters between explanations of the anorexia-suicide link. *Journal of Affective Disorders*, 107(1-3), 231-236.
- Keel, P. K., Dorer, D. J., Eddy, K. T., Franko, D., Charatan, D., & Herzog, D. (2003). Predictors of mortality in eating disorders. *Archives of General Psychiatry*, 60, 179-183.
- Kaye, W. (2008). Neurobiology of anorexia and bulimia nervosa. *Physiology & Behavior*, 94, 121-135.
- Milos, G., Spindler, A., Hepp, U., & Schnyder, U. (2004). Suicide attempts and suicidal ideation: Links with psychiatric comorbidity in eating disorder subjects. *General Hospital Psychiatry*, 26(2), 129-135.
- Miotto, P., De Coppi, M., Frezza, M., & Preti, A. (2003). Eating disorders and suicide risk factors in adolescents: An Italian community-based study. *Journal of Nervous and Mental Disease*, 191(7), 437-443.

- Møller-Madsen, S. Nystrup, J. & Nielsen, S. (1996). Mortality in anorexia nervosa in Denmark during the period 1970-1987. *Acta Psychiatrica Scandinavica*, 94(6), 454-459.
- Nickel, C., Simek, M., Moleda, A., Muehlbacher, M., Buschmann, W., Fartacek, R., Bachler, E., Egger, C., Rother, W., Loew, T., & Nickel, M. (2006). Suicide attempts versus suicidal ideation in bulimic female adolescents. *Pediatrics International*, 48(4), 374-381.
- Nielsen, S., Møller-Madsen, S., Isager, T., Jørgensen, J., Pagsberg, K., & Theander, S. (1998). Standardized mortality in eating disorders – a quantitative summary of previously published and new evidence. *Journal of Psychosomatic Research*, 44(3-4), 413-434.
- Pompili, M., Girardi, P., Tatarelli, G., Ruberto, A., & Tatarelli, R. (2006). Suicide and attempted suicide in eating disorders, obesity and weight-image concern. *Eating Behaviors*, 7(4), 384-394.
- Pompili, M., Mancinelli, I. Girardi, P. Ruberto, A. & Tatarelli, R. (2004). Suicide in anorexia nervosa: A meta-analysis. *International Journal of Eating Disorders*, 36(1), 99-103.
- Pompili, M. & Tatarelli, R. (2005). Eating disorders, especially anorexia nervosa, are associated with an increased risk of suicide attempt in young women. *Evidence-Based Mental Health*, 8, 20.
- Pryor, T., Wiederman, M. W., & McGilley, B. (1996). Clinical correlates of anorexia nervosa subtypes. *International Journal of Eating Disorders*, 19, 371-379.

- Rodriguez-Cano, T., Beato-Fernández, L. & Liario, A. B. (2006). *Journal of Adolescent Health*, 38(6), 684-688.
- Rudd, M. D., Berman, L., Joiner, T, Nock, M., Silverman, M. M., Mandrusiak, M., Van Orden, K., & Whute, T. (2006). Warning signs for suicide: Theory, research, and clinical application. *Suicide and Life-Threatening Behavior*, 36 (3), 255-262.
- Sullivan, P. F. (1995). Mortality in anorexia nervosa. *American Journal of Psychiatry*, 152, 1073–1074.
- Vervaet, M., van Heeringen, C., Bernagie, K. & Portzky, G. (2008, August). Personality traits in AN with and without AS. Paper presented at the 12th European Symposium on Suicide and Suicidal Behaviours, Glasgow, Scotland.