

Data supplement

Table DS1 Studies that report standardised mortality ratios (SMR) in eating disorders by descending SMR^a

Study	<i>n</i>	Follow-up Years, mean	Diagnostic sys- tem	Crude mortality ratio, %	SMR	95% CI	Entry period	Comment	Country
Norring & Sohlberg, 1993 ¹	48	6.0	DSM-III-R	6.3	17.8	(3.7–51.9) ^d	1984	9 people with AN	Sweden
Eckert <i>et al</i> , 1995 ²	76	9.6	DSM-III-R	6.6	12.8	(4.2–29.9) ^d	1975	Females, AN	USA
Keel <i>et al</i> , 2003 ³	136	8.6	DSM-IV	7.4	11.6	(5.5–21.3)	1987–1991	Females, AN	USA, Boston
Lee <i>et al</i> , 2003 ⁴	88	9.0	DSM-III-R	3.4	10.5	(2.2–30.8) ^d	1984–2000	Females, AN	Hong Kong
Birmingham <i>et al</i> , 2005 ⁵	326	7.3	DSM-III/ICD-10	5.2	10.5	(5.5–15.5)	1981–2000	Both genders, AN	Canada
Lowe <i>et al</i> , 2001 ⁶	84	21.3	DSM-IV	16.7	9.8		1971–1980	Females, AN	Germany
Signorini <i>et al</i> , 2007 ⁶	147	8 ^c	DSM-IV	2.7	9.7		1994–1997	Females, AN	Italy, Naples
Moller-Madsen <i>et al</i> , 1996 ⁸	790	7.8	ICD-8	5.7	9.2	(6.7–12.3)	1970–1986	Females, AN	Denmark
Fichter <i>et al</i> , 2006 ⁹	103	12.0 ^c	DSM-IV	6.8	8.9	(2.3–15.4)	1985–1988	Females, AN	Germany
Crow <i>et al</i> , 1999 ¹⁰	54	7.5	Undefined	7.4	8.4		1985–1990	Both genders, AN	USA, Minnesota
Lindblad <i>et al</i> , 2006 ¹¹	564	12–16 ^c	ICD-8	4.4	7.7		1977–1981	<18, female, AN	Sweden
Joergensen, 1992 ¹²	132 ^b	11.7	DSM-III-R	16.7	7.2	(4.5–10.8)	1977–1986	Both genders, ED	Denmark
Pagsberg & Wang, 1994 ¹³	50 ^b	6.2	ICD-10	6	6.9	(1.4–20.2)	1970–1989	Both genders, AN	Denmark
Emborg, 1999 ¹⁴	2763	10.3	ICD-8	8.4	6.7	(5.7–7.8)	1970–1993	Both genders, ED	Denmark
Patton, 1988 ¹⁵	332	7.6	Russel (1970)	3.3	6.0	(3.0–10.8) ^d	1971–1981	Both genders, AN	England
Tolstrup <i>et al</i> , 1985 ¹⁶	151	22.9	Tolstrup (1985)	11.9	4.8	(2.6–7.6)	1960–1976	Both genders, AN	Denmark
Crisp <i>et al</i> , 1992 ¹⁷	63 ^b	22.1	DSM-III-R	13.0	4.7	(2.0–9.3) ^d	1965–1973	Females, AN	England
Millar <i>et al</i> , 2005 ¹⁸	487 ^b	Up to 35 ^c	Aberdeen, ICD-9	4.1	3.2	(2.1–5.0)	1965–1999	Females, AN	North Scotland
Theander, 1970 ¹⁹	94	36.2	Theander (1970)	25.5	2.9	(1.9–4.4)	1931–1960	Females, AN	Sweden
Lindblad <i>et al</i> , 2006 ¹¹	554	12–16 ^c	ICD-9	1.3	2.9		1987–1991	<18, females, AN	Sweden
Crisp, 2006 ²⁰	850	0–30 ^c	DSM-IV	5.5	1.0	(0.8–1.3)	1960–1990	Females, AN	England
Korndorfer <i>et al</i> , 2003 ²¹	208 ^b	27.1	DSM-III-R	8.2	0.7	(0.4–1.1)	1935–1989	Both genders, AN	USA, Rochester
Halvorsen <i>et al</i> , 2004 ²²	55	8.8	DSM-IV	0	0		1986–1998	<18, females, AN	Norway
Strober <i>et al</i> , 1997 ²³	95	10–15 ^c	DSM-III	0	0		1980–1985	<18, both genders, AN	USA, UCLA
Wentz <i>et al</i> , 2001 ²⁴	51 ^b	10 ^c	DSM-III-R	0	0		1985	<18, both genders, AN	Sweden

AN, anorexia nervosa; ED, eating disorders; UCLA, University of California, Los Angeles.
a. When there is more than one publication on the same study population only the latest is included (longer follow-up time). Whenever possible only data on women with anorexia nervosa are presented
b. Study based on the general population, all other studies are of hospitalised patients.
c. Actual follow-up not mean follow-up.
d. 95% CI not provided by the authors, thus estimated here when possible on the assumption that the observed number of deaths in each group followed a Poisson distribution.

Table DS2 Distribution of population and observed deaths (total, unnatural and natural) across related variables				
	<i>n</i> (%)	Total deaths <i>n</i> (%)	Unnatural deaths <i>n</i> (%)	Natural deaths <i>n</i> (%)
All	6009	265	126	139
Period for first anorexia nervosa admission				
1973–1979 (ICD–8)	891 (15)	110 (42)	48 (38)	62 (45)
1980–1986 (ICD–8)	1395 (23)	100 (38)	40 (32)	60 (43)
1987–1996 (ICD–9)	2148 (36)	45 (17)	29 (23)	16 (12)
1997–2003 (ICD–10)	1575 (26)	10 (4)	9 (7)	1 (0.7)
Age at first anorexia nervosa admission, years				
10–19	3691 (61)	78 (29)	42 (33)	36 (26)
20–29	1823 (30)	116 (44)	58 (46)	58 (42)
30–39	495 (8)	71 (27)	26 (21)	45 (32)
Number of hospitalisations for anorexia nervosa				
1–5	5124 (85)	176 (66)	87 (69)	89 (64)
6–10	554 (9)	40 (15)	18 (14)	22 (16)
11+	331 (6)	49 (18)	21 (17)	28 (20)
Hospitalisations for other psychiatric disorders ^a				
0	3201 (53)	75 (28)	26 (21)	49 (35)
1–5	1886 (31)	93 (35)	46 (36)	47 (34)
6–10	360 (6)	28 (11)	16 (13)	12 (9)
11+	562 (9)	69 (26)	38 (30)	31 (22)
Hospitalisations for somatic diseases ^{a,b}				
0	1746 (29)	38 (14)	22 (18)	16 (12)
1–5	3264 (54)	115 (43)	57 (45)	58 (42)
6–10	540 (9)	50 (19)	26 (21)	24 (17)
11+	459 (8)	62 (23)	21 (17)	41 (30)
Medical history before first anorexia nervosa admission				
No admissions	3190 (53)	126 (48)	57 (45)	69 (50)
Somatic history ^b	1963 (33)	70 (26)	33 (26)	37 (27)
Psychiatric history	266 (4)	18 (7)	7 (6)	11 (8)
Both	590 (10)	51 (19)	29 (23)	22 (16)
Comorbidity after first anorexia nervosa admission				
No comorbidity	1585 (26)	24 (9)	12 (10)	12 (9)
Somatic comorbidity ^b	1765 (29)	54 (20)	16 (13)	38 (28)
Psychiatric comorbidity	474 (8)	18 (7)	13 (10)	5 (4)
Both	2185 (36)	169 (64)	85 (68)	84 (60)
First hospital stay, days				
0–5	1886 (31)	94 (36)	43 (34)	51 (37)
6–30	2187 (36)	99 (37)	52 (4)	47 (34)
31+	1936 (32)	72 (27)	31 (25)	41 (30)

a. Anorexia nervosa admissions excluded.

b. Somatic comorbidity is defined as in-patient treatment for any somatic disorder except for pregnancy complications, childbirth and the puerperium.

Table DS3 Distribution of underlying causes of death according to ICD-9 diagnostic groups, together with the most common specific causes of death per diagnostic category and distribution of selected secondary causes of death in each diagnostic group					
Underlying cause of death	<i>n</i>	Specific underlying causes	<i>n</i>	Secondary causes	<i>n</i>
Total	265			Anorexia nervosa	35
Natural	139			Anorexia nervosa	30
Infections	0				
Cancer	29	Gastrointestinal	7	Anorexia nervosa	–
		Melanoma	5	Anorexia nervosa	–
		Respiratory	4	Anorexia nervosa	–
		Cervix uteri	4	Anorexia nervosa	–
		Other	9	Anorexia nervosa	–
Endocrine	9	Diabetes	5	Anorexia nervosa	1
		Other	4	Anorexia nervosa	–
Haematopoietic	1	Anaemia	1	Anorexia nervosa	–
Mental	54 ^a				
Psychoactive substance use	13	Alcohol related	10	Anorexia nervosa	–
		Other	3	Anorexia nervosa	–
Anorexia nervosa ^b	39			Anorexia nervosa	24
				Cachexia	5
				Disorders of the nervous system	5
				Nutritional deficiencies/ protein-energy malnutrition	5
				Shock without mention of trauma	5
				Cardiac arrhythmias	3
				Disorders of fluid, electrolyte and acid-base balance	3
				Infections	3
				Psychoactive substance use	3
				Other	8
Nervous system	4	Multiple sclerosis	2	Anorexia nervosa	–
		Status epilepticus	1	Anorexia nervosa	–
		Hemiplegia	1	Anorexia nervosa	–
Cardiovascular	11	Acute myocardial infarction	3	Anorexia nervosa	–
		Heart failure	2	Anorexia nervosa	–
		Other	6	Anorexia nervosa	2
Respiratory	14	Pneumonia	10	Anorexia nervosa	2
		Other	4	Anorexia nervosa	1
Gastrointestinal	6	Liver cirrhosis	4	Anorexia nervosa	–
		Other	2	Anorexia nervosa	–
Urogenital	2	Pyelonephritis	2	Anorexia nervosa	–
Dermatological	0				
Autoimmune	3	Rheumatoid arthritis	2	Anorexia nervosa	–
		Systemic lupus erythematosus	1	Anorexia nervosa	–
Other	6			Anorexia nervosa	–
Unnatural	126			Anorexia nervosa	5
Suicide	84	Poisoning – drugs	39	Anorexia nervosa	1
		Hanging	17	Anorexia nervosa	–
		Drowning	8	Anorexia nervosa	–
		Jumping from high or lying in front of moving vehicle	9	Anorexia nervosa	1
		Sharp object	5	Anorexia nervosa	–
		Other	6	Anorexia nervosa	1
Homicide	4			Anorexia nervosa	–
Traffic accidents	7			Anorexia nervosa	–
Undefined	19			Anorexia nervosa	1
Other	12			Anorexia nervosa	1

a. In the mental causes of death one death was registered as due to other specified eating disorder (F50.8) and one death had the non-existent ICD code '305.50' which presumably also indicates anorexia nervosa but it was excluded from further analyses.

b. The sum of frequencies of secondary causes of death is greater than 39, because in the death certificate multiple secondary causes of death (up to 6) can be registered.

Table DS4 Poisson multiple regression core model and alternatively introduced variables for total, unnatural and natural deaths ^a									
	Total			Unnatural deaths			Natural deaths		
	<i>n</i>	RR	95% CI	<i>n</i>	RR	95 %CI	<i>n</i>	RR	95% CI
All	265			126			139		
Period for first anorexia nervosa admission									
1973–1979 (ICD–8)	110	reference=1		48	reference=1		62	reference=1	
1980–1986 (ICD–8)	100	0.8	0.6–1.1	40	0.7	0.4–1.1	60	0.9	0.6–1.3
1987–1996 (ICD–9)	45	0.4	0.3–0.5	29	0.5	0.3–0.8	16	0.3	0.2–0.5
1997–2003 (ICD–10)	10	0.3	0.2–0.6	9	0.5	0.2–1.1	1	0.1	0.0–0.6
Age at first anorexia nervosa admission, years									
10–19	78	reference=1		42	reference=1		36	reference=1	
20–29	116	2.2	1.5–3.3	58	1.8	1.1–3.0	58	2.8	1.6–4.8
30–39	71	3.6	2.0–6.6	26	3.0	1.2–7.5	45	4.4	1.9–10.0
Duration of first anorexia nervosa hospital stay, days									
0–5	94	reference=1		43	reference=1		51	reference=1	
6–30	99	0.8	0.6–1.0	52	0.9	0.6–1.4	47	0.6	0.4–0.9
31+	72	0.7	0.5–0.9	31	0.6	0.4–1.0	41	0.7	0.5–1.0
Follow-up after first anorexia nervosa admission, years									
< 1	17	1.8	0.8–4.4	17	3.3	1.0–11.3	0		
1–2	48	2.6	1.2–5.5	27	2.6	0.8–8.2	21	2.4	0.9–6.4
3–4	37	2.0	1.0–4.1	16	1.5	0.5–4.7	21	2.4	0.9–6.2
5–9	50	1.1	0.6–2.0	27	1.0	0.4–2.7	23	1.0	0.5–2.4
10–19	79	1.0	0.6–1.6	27	0.7	0.3–1.6	52	1.1	0.6–2.1
20+	34	reference=1		12	reference=1		22	reference=1	
Number of hospitalisations for anorexia nervosa ^b									
1–5	176	reference=1		87	reference=1		89	reference=1	
6–10	40	2.0	1.4–2.8	18	1.9	1.1–3.1	22	2.0	1.3–3.2
11+	49	3.6	2.6–5.0	21	3.2	2.0–5.3	28	4.0	2.6–6.1
Hospitalisations for other psychiatric disorders ^{b,c}									
0	75	reference=1		26	reference=1		49	reference=1	
1–5	93	1.9	1.4–2.6	46	2.9	1.8–4.7	47	1.4	1.0–2.2
6–10	28	2.4	1.6–3.8	16	4.4	2.3–8.2	12	1.5	0.8–2.8
11+	69	3.6	2.6–5.1	38	6.4	3.8–10.7	31	2.3	1.4–3.6
Hospitalisations for somatic diseases ^c									
0	38	reference=1		22	reference=1		16	reference=1	
1–5	115	1.2	0.8–1.8	57	1.1	0.7–1.8	58	1.4	0.8–2.5
6–10	50	2.1	1.4–3.3	26	2.1	1.2–3.8	24	2.2	1.1–4.2
11+	62	2.8	1.8–4.3	21	1.9	1.0–3.5	41	4.0	2.2–7.3
Medical history before first anorexia nervosa admission ^d									
No admissions	126	reference=1		57	reference=1		69	reference=1	
Somatic history	70	1.1	0.8–1.5	33	1.1	0.7–1.7	37	1.1	0.7–1.6
Psychiatric history	18	1.1	0.7–1.8	7	1.1	0.5–2.3	11	1.1	0.6–2.1
Both	51	1.9	1.4–2.7	29	2.6	1.6–4.1	22	1.4	0.9–2.4
Comorbidity after first anorexia nervosa admission ^d									
No comorbidity	24	reference = 1		12	reference = 1		12	reference = 1	
Somatic comorbidity	54	1.2	0.7–1.9	16	0.8	0.4–1.6	38	1.5	0.8–2.8
Psychiatric comorbidity	18	2.0	1.1–3.7	13	3.0	1.4–6.5	5	1.1	0.4–3.0
Both	169	2.7	1.7–4.2	85	3.1	1.7–5.7	84	2.4	1.3–4.4

a. The core model also includes the 'age at follow-up' variable which is not shown in this table. Statistically significant relative risk (RR) are printed in bold

b. Alternatively introduced variable in Poisson model.

c. Anorexia nervosa admissions excluded.

d. Medical history and comorbidity refer to in-patient care.