

**Online-only supplemental data content**

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References

**Table 1. International Classification of Diseases (ICD) codes used to identify patients with health-care visits for non-fatal self-harm, substance abuse and mental disorders**

<b>Condition</b>	<b>ICD-8</b>	<b>ICD-9</b>	<b>ICD-10</b>
Attempted suicide/self-harm	E950-959, E980-989	E950-959, E980-989	X60-84, Y10-34, Y870
Substance abuse	291; 394.3; 303-304; 970.00; 971; 989.99	291-292, 303-304, 305A, 305B, 305X, 357F, 425F, 535D, 571A, 571B, 571C, 571D	F10-F19, G621, I426, G721, K292, K700-K704, K709, K852, K860, G312, Z714-Z715, Z721-Z722
Mental disorders	290-315	290-319	Chapter F

**Table 2. Self-administered questionnaires used to assess eating behaviors and health-related quality of life (HRQL)**

	<b>Questionnaire</b>	<b>Items and response scale</b>	<b>Scoring</b>	<b>Interpretation</b>
<b>Eating behavior</b>				
Cognitive restraint of eating, disinhibition, and susceptibility to hunger	The Three-Factor Eating Questionnaire <sup>a</sup>	21 cognitive restraint items, 16 disinhibition items, and 14 hunger items. The scale contains 36 items with a yes/no response format, 14 items on a 4-point response scale, and a vertical rating scale from 0 to 10.	All item responses were dichotomized and summed up into separate cognitive restraint (score range: 0–21), disinhibition (score range: 0–16), and hunger (score range: 0–14) scores	Higher scores indicate more cognitive restraint, disinhibition, and hunger
<b>Physical HRQL</b>				
Perceived health status	The Current Health scale of the General Health Rating Index <sup>b</sup>	9 items on a 4-point response scale with two acceptance and two rejection alternatives. E.g. “My health is excellent.”, “I have been feeling bad lately.”	The items were summed up into a total score. Score range: 0–100	Higher scores indicate better perceived health status
<b>Mental HRQL</b>				
Overall mood	The short version of the Mood Adjective Check List <sup>c</sup>	38 adjectives on a 4-point response scale with two acceptance and two rejection alternatives. The scale measures three major bipolar dimensions of mood: pleasantness/unpleasantness, activation/deactivation, and calmness/tension.	Mean score of all items was calculated to describe overall mood. Score range: 1–4	Higher scores indicate more positive mood states.
Depression and anxiety	The Hospital Anxiety and Depression Scale <sup>d</sup>	7 depression items and 7 anxiety items on a 4-point response scale.	The items were summed up into three scores: anxiety and depression scores (range 0–21), total score (range: 0–42).	Higher scores indicate more symptoms.
<b>Social HRQL</b>				
Health-related limitations in social life	The Social Interaction category of the Sickness Impact Profile <sup>e</sup>	20 items on quality and quantity of social interaction within the family, among friends and in the community.	Scores represent the weighted sum of the endorsed items. Score range: 0–100	Higher scores indicate more dysfunction in social interaction.
Impact of obesity on psychosocial functioning	The Obesity-related Problems scale <sup>f</sup>	8 items on a 4-point response scale. Respondents are asked to indicate how bothered they are by their obesity in a broad range of social activities (e.g. private gatherings at home, going to restaurants, trying on and buying clothes, intimate relations).	Responses were aggregated to a total score. Score range: 0–100	Higher scores indicate more impairment in psychosocial functioning.

**Table 3. Baseline descriptive characteristics by non-fatal self-harm/suicide status during the follow up in the Swedish Obese Subjects study**

Variable	No self-harm/suicide event (N=3890)		Self-harm/suicide event (N=157)	
	Mean / %	SD / N	Mean / %	SD / N
<b>Treatment group</b>				
Control (%)	51.0	1984	35.7	56
Surgery (%)	49.0	1906	64.3	101
<b>Sociodemographics</b>				
Age (years)	47.9	6.1	47.8	6.3
Men (%)	28.9	1123	36.3	57
Married or partner (%)	74.3	2877	70.1	110
Education				
Basic (%)	64.7	2517	62.4	98
Upper secondary (%)	18.1	706	24.2	38
University (%)	17.1	667	13.4	21
<b>Health status</b>				
Diabetes (%)	15.1	586	13.5	21
BMI (kg/m <sup>2</sup> )	41.3	4.8	40.9	4.1
Joint pain (%)	61.0	2373	75.8	119
<b>History of psychiatric disorder</b>				
Self-harm (%)	2.1	83	15.3	24
Substance abuse (%)	2.3	90	11.5	18
Mental disorder (%)	8.1	317	36.3	57
Psychiatric drug use (%)	10.6	411	33.8	53
<b>Lifestyle behaviors</b>				
Daily smokers (%)	22.7	881	37.6	59
Alcohol intake (g/day)	5.2	7.6	7.0	9.9
Sleep difficulties (awake in bed/night, h)	1.0	0.9	1.6	1.3
Cognitive restraint (TFEQ) <sup>a</sup>	9.3	4.6	8.5	4.5
Disinhibition (TFEQ) <sup>a</sup>	9.1	3.6	9.5	3.4
Hunger (TFEQ) <sup>a</sup>	6.9	3.5	7.7	3.6
<b>Self-rated HRQL<sup>b</sup></b>				
Perceived health	54.3	25.3	42.5	26.5
Anxiety	5.6	4.5	8.0	4.9
Depression	4.6	3.6	6.1	4.2
Overall mood	2.9	0.6	2.7	0.7
Obesity-related problems	49.7	28.1	58.4	29.2
Social interaction	11.3	12.9	17.7	15.2

Abbreviations: HRQL, health-related quality of life; TFEQ, Three-Factor Eating Questionnaire.

<sup>a</sup>Higher scores represent more cognitive restraint (score range 0–21), disinhibition (score range 0–16), and hunger (score range 0–14).

<sup>b</sup>Perceived health: higher scores represent better perceived health (score range 0–100). Social interaction and obesity-related problems: higher scores represent more dysfunction (score range 0–100). Overall mood: higher scores represent more positive mood states (score range 1–4). Anxiety and depression: higher scores represent more symptoms (score range 0–21).

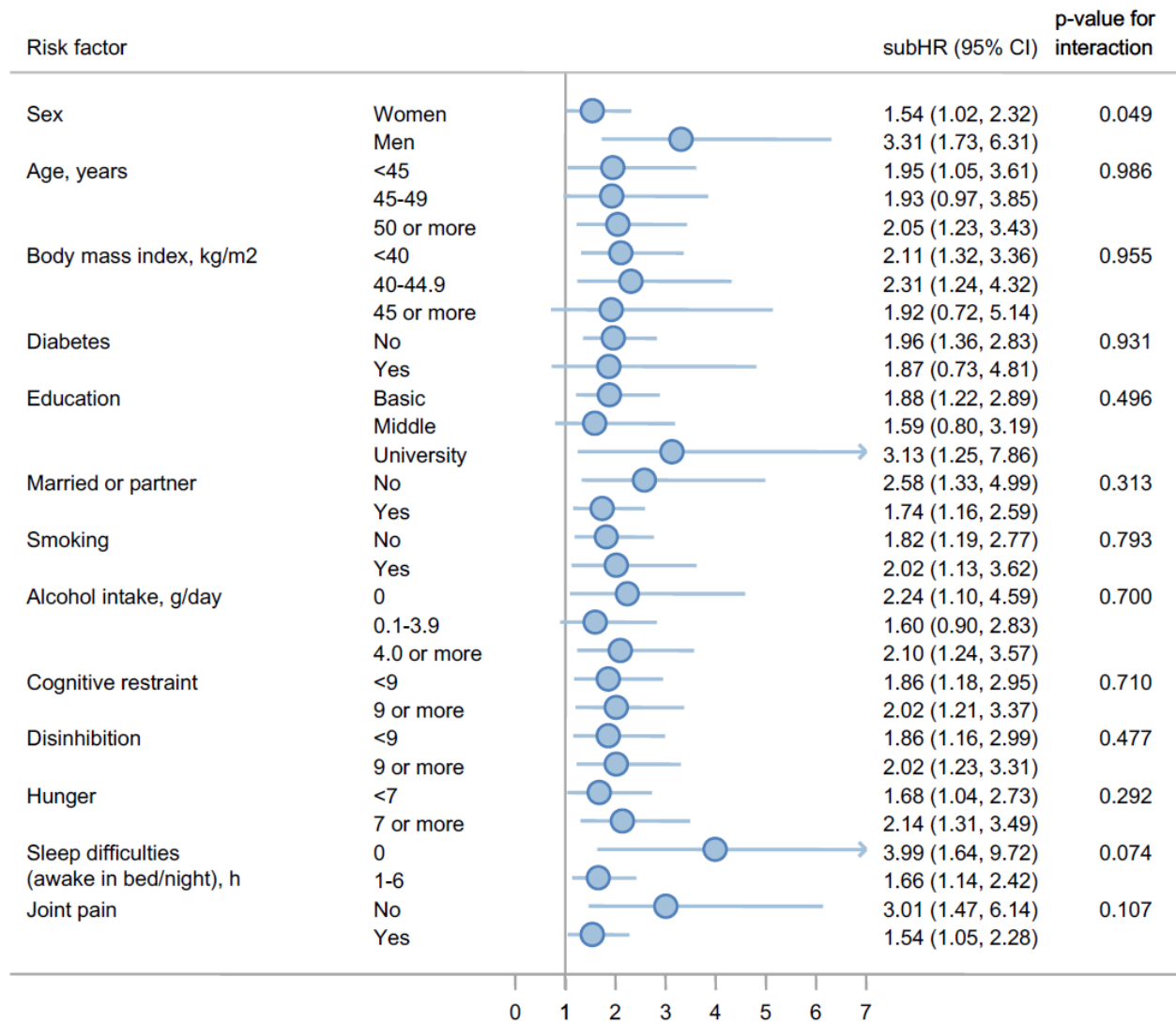
**Table 4. Results from univariate competing risk regression models predicting the risk of non-fatal self-harm and suicide in the Swedish Obese Subjects study**

Risk factor		Control (N=2040)			Surgery (N=2007)		
		subHR	[95% CI]	p value	subHR	[95% CI]	p value
Age (years)		1.00	[0.96-1.05]	0.848	1.02	[0.98-1.05]	0.385
Sex	Women	1.00	[1.00-1.00]	.	1.00	[1.00-1.00]	.
	Men	0.74	[0.39-1.42]	0.371	1.60	[1.06-2.39]	0.023
Married or partner	No	1.00	[1.00-1.00]	.	1.00	[1.00-1.00]	.
	Yes	1.06	[0.55-2.03]	0.864	0.72	[0.47-1.09]	0.117
Education	Basic	1.00	[1.00-1.00]	.	1.00	[1.00-1.00]	.
	Middle	1.46	[0.76-2.79]	0.253	1.25	[0.76-2.06]	0.383
	University	0.67	[0.30-1.53]	0.346	1.13	[0.62-2.05]	0.682
Diabetes	No	1.00	[1.00-1.00]	.	1.00	[1.00-1.00]	.
	Yes	0.91	[0.39-2.13]	0.827	0.86	[0.49-1.48]	0.582
BMI (kg/m <sup>2</sup> )		0.98	[0.92-1.03]	0.363	0.95	[0.91-0.99]	0.027
Joint pain	No	1.00	[1.00-1.00]	.	1.00	[1.00-1.00]	.
	Yes	2.88	[1.48-5.63]	0.002	1.47	[0.93-2.34]	0.099
History of self-harm	No	1.00	[1.00-1.00]	.	1.00	[1.00-1.00]	.
	Yes	3.67	[1.12-12.03]	0.032	8.35	[4.94-14.10]	<0.001
History of substance abuse	No	1.00	[1.00-1.00]	.	1.00	[1.00-1.00]	.
	Yes	2.57	[0.81-8.13]	0.108	6.00	[3.28-10.98]	<0.001
History of mental disorder	No	1.00	[1.00-1.00]	.	1.00	[1.00-1.00]	.
	Yes	5.73	[3.19-10.29]	<0.001	6.24	[4.14-9.41]	<0.001
Psychiatric drug use	No	1.00	[1.00-1.00]	.	1.00	[1.00-1.00]	.
	Yes	4.04	[2.22-7.32]	<0.001	4.48	[2.96-6.77]	<0.001
Smoking	No	1.00	[1.00-1.00]	.	1.00	[1.00-1.00]	.
	Yes	1.79	[0.99-3.25]	0.055	1.98	[1.32-2.96]	0.001
Alcohol intake (g/day)		1.02	[0.99-1.05]	0.204	1.03	[1.01-1.05]	0.008
Sleep difficulties (awake in bed/night, h)		1.81	[1.50-2.17]	<0.001	1.51	[1.27-1.79]	<0.001
Cognitive restraint (TFEQ) <sup>a</sup>		0.97	[0.91-1.03]	0.318	0.98	[0.94-1.03]	0.481
Disinhibition (TFEQ) <sup>a</sup>		1.00	[0.92-1.08]	0.940	1.03	[0.98-1.08]	0.214
Hunger (TFEQ) <sup>a</sup>		1.02	[0.95-1.10]	0.522	1.08	[1.02-1.15]	0.012
Perceived health <sup>b</sup>		0.98	[0.97-0.99]	0.001	0.99	[0.98-0.99]	0.001
Anxiety <sup>c</sup>		1.09	[1.03-1.15]	0.002	1.12	[1.07-1.16]	<0.001
Depression <sup>c</sup>		1.08	[1.01-1.16]	0.024	1.11	[1.06-1.17]	<0.001
Overall mood <sup>d</sup>		0.53	[0.34-0.84]	0.007	0.44	[0.31-0.62]	<0.001
Obesity-related problems <sup>e</sup>		1.01	[1.00-1.02]	0.131	1.01	[1.00-1.02]	0.027
Social interaction <sup>f</sup>		1.02	[1.01-1.04]	<0.001	1.03	[1.02-1.04]	<0.001

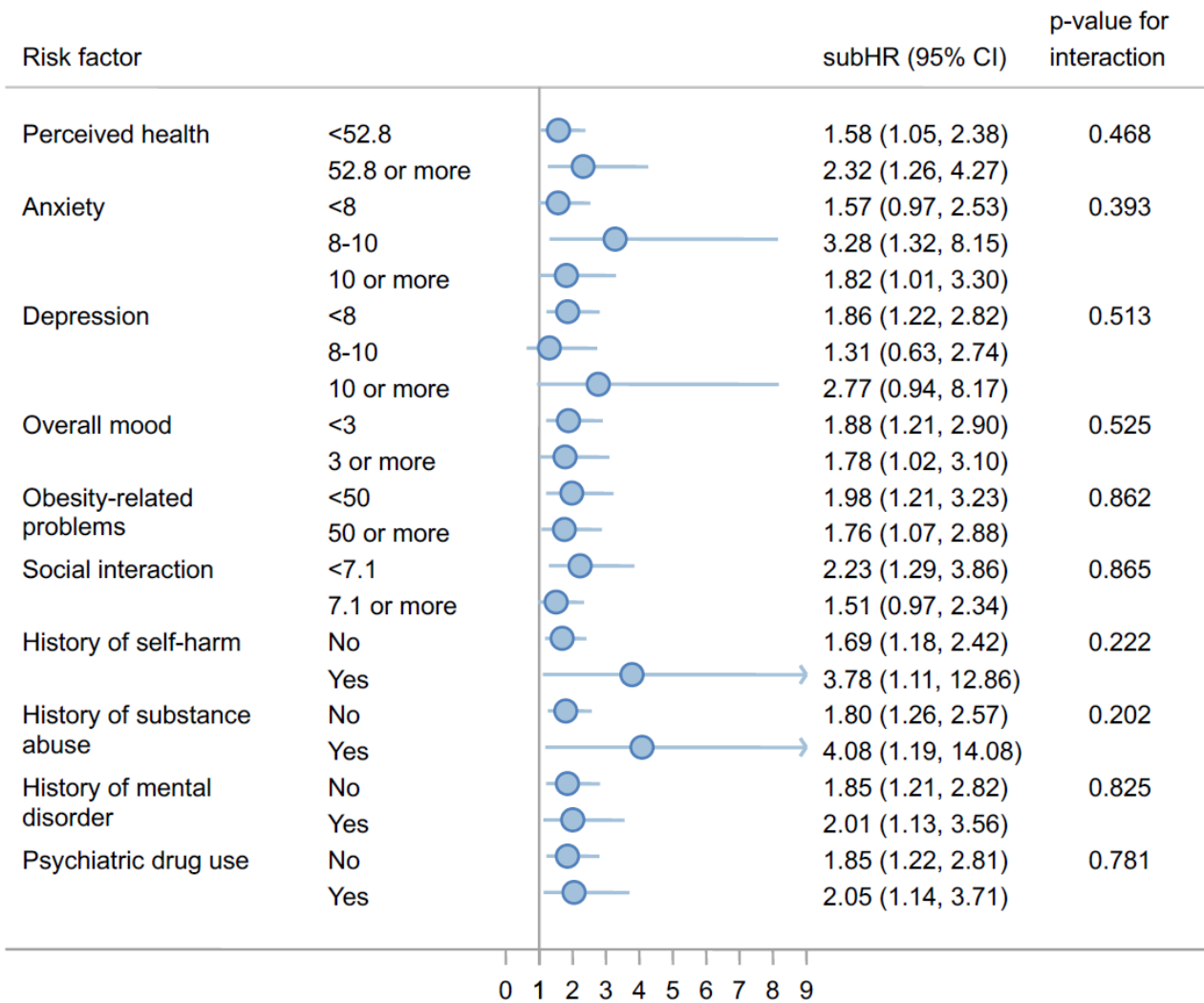
Abbreviations: subHR, sub-hazard ratio; CI, confidence interval; TFEQ, Three-Factor Eating Questionnaire.

<sup>a</sup>Higher scores represent more cognitive restraint (score range 0–21), disinhibition (score range 0–16), and hunger (score range 0–14).

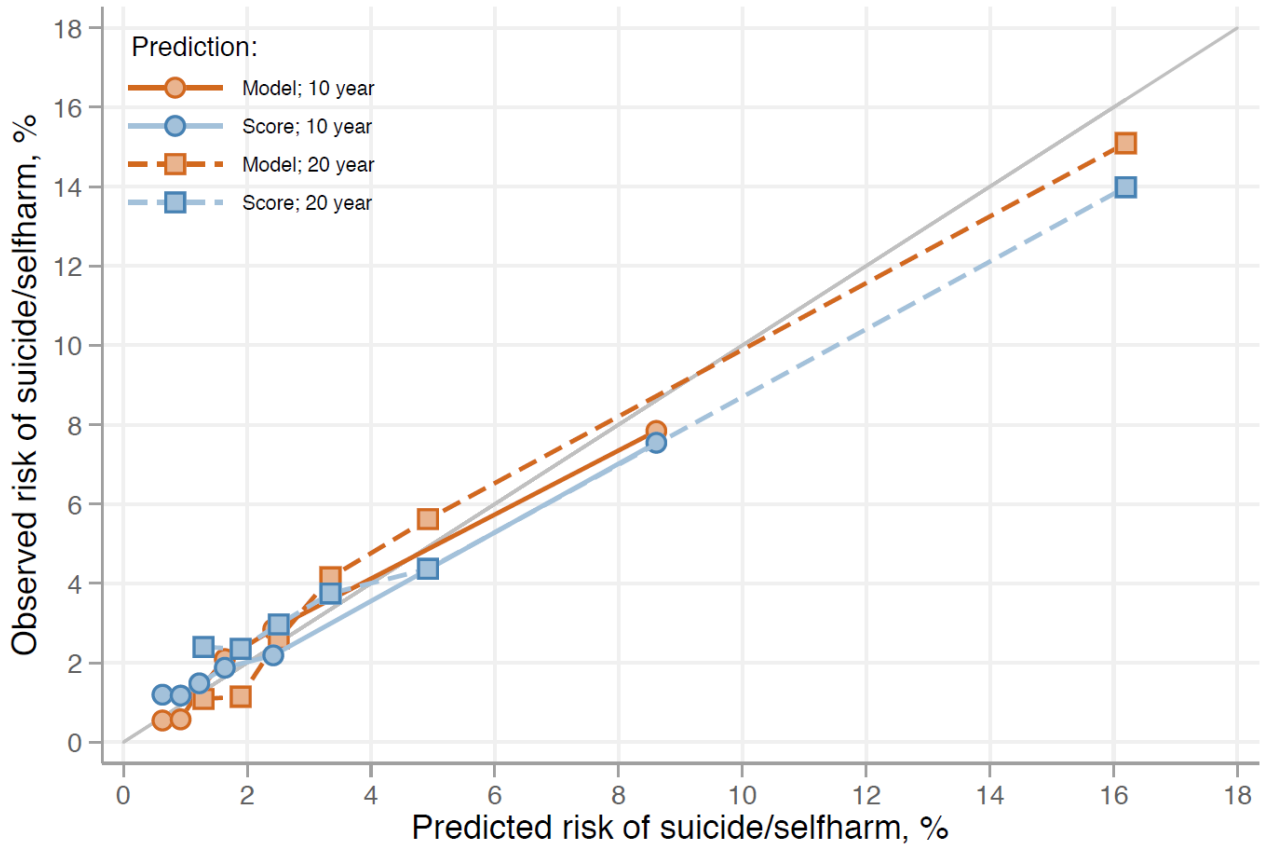
<sup>b</sup>Perceived health: higher scores represent better perceived health (score range 0–100). Social interaction and obesity-related problems: higher scores represent more dysfunction (score range 0–100). Overall mood: higher scores represent more positive mood states (score range 1–4). Anxiety and depression: higher scores represent more symptoms (score range 0–21).



**Figure 1. Forest plots for non-fatal self-harm and suicide in the Swedish Obese Subjects study by sociodemographic factors, health status and lifestyle behaviors.** Cognitive restraint, disinhibition and hunger scores were dichotomized using the median as the cut-off score. Abbreviations: subHR, sub-hazard ratio; CI, confidence interval.



**Figure 2. Forest plots for non-fatal self-harm and suicide in the Swedish Obese Subjects study by health-related quality of life and history of psychiatric disorder.** Perceived health, overall mood, obesity-related problems and social interaction scores were dichotomized using the median as the cut-off score. Depression and anxiety scores were categorized as proposed by Zigmond and Snaith: scores < 8 = normal range, scores 8–10 = a possible case of mood disorder, and scores > 10 = a probable case of mood disorder. Abbreviations: subHR, sub-hazard ratio; CI, confidence interval.



**Figure 3. Calibration plot of the risk score model and the derived score points in the surgery group of the Swedish Obese Subjects study. See Table 3 for more details on the score model and the score points.**



**References**

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