Disordered eating

The EAT (Eating Attitude Test) is a standardized self-report questionnaire that has been used to identify individuals at risk of developing EDs [1] in both clinical and non-clinical adolescent populations and can discriminate eating disordered patients and controls[2]. Since EAT was considered too long to be included in the Young-HUNT Study, a shortened version, EAT-7, was used to identify disordered eating. For psychometric properties of EAT-7 [3]. Psychometric properties of the EAT-7 have been previously validated in two cohorts, YH1 [4] and 'Young in Norway' [5], and a two-factor solution of the EAT-7: EAT-A or "poor appetite/undereating" and EAT-B or "uncontrolled appetite/overeating", is reported to be robust for age and gender [4].

The EAT-A comprises the questions: 1) It can be difficult to stop eating when I first begin to eat, 2) I spend too much time thinking about food, 3) I feel that food controls my life, and 4) When I eat, I cut food in small pieces. EAT-B consists of questions: 1) When I eat a meal, I spend longer time than others, 2) Others think that I am too thin and 3) I feel that others pressure me to eat. Participants answered questions on a Likert scale with response options: "never/seldom" (coded as 0), "often" (coded as 1) and "always" (coded as 2). Scores on each question item were added up to determine sum-scores on EAT-A and EAT-B subscales separately. A maximum score for the EAT-A and EAT-B were therefore 8 and 6, respectively. Previously reported cut-off points [4] were then used to categorize participants into groups of cases with elevated EAT-A (score ≥ 3) or EAT-B (score ≥ 2). Cases were compared to adolescents scoring below these cut offs. Adolescents who scored above the cut-off on both the EAT-A and EAT-B (92 persons in total) were included in the analyses since associations between each EAT-7 subscale and SI were not deemed mutually exclusive. Cronbach's alphas were 0.57, 0.42 and 0.54 for EAT-A, EAT-B and EAT-7, respectively.

Principal Component Analysis for optimal cut-off points for EAT-A and EAT-B has been in agreement with previous reports and the cut-off points were also validated against the EAT-12 [4].

Mental distress

The Five-item Hopkins Symptom Checklist (SCL-5) [6], a valid and reliable measure of mental distress [7] was used to measure mental distress. SCL-5 is a shorter version of SCL-25 that constitutes 10 questions on anxiety and 15 questions on depression [8]. Self-rated measures of anxiety and depression on SCL-25 have a reported concordance rate of 86.7% with clinical assessment by a physician [8]. Stepwise regression has been used to identify question items that had maximum correlation with the scores on anxiety, depression and global scores on SCL-25 [7] [9]. Five of these question items constitute SCL-5, with an estimated correlation of 0.92 with SCL-25, an alpha reliability at 0.85 [9] and estimated sensitivity and specificity of 82% and 96 %, respectively [6].

On SCL-5, participants rated the presence or absence of the following five symptoms on a four-point Likert scale ranging from 1) "not bothered" to 4) "very much bothered" in response to the following question: "During the last 14 days", have you: 1) "Been constantly afraid and anxious", 2) "Felt tense or uneasy", 3) "Felt hopelessness when you think of the future", 4) "Felt dejected or sad" or 5) "Worried too much about various things". Only participants who had answered four or more questions were included. Sum scores were calculated by adding up scores on each question item. The sum score was then divided by the number of items answered. Based on previously reported cut-off points, SCL-5 scores of ≥2 were categorized as having "high" degree of mental distress (anxiety or depression), whereas SCL-5 scores < 2 were considered as "low" levels of mental distress [6].

References:

1.	Garner, D.M. and P.E. Garfinkel, *The Eating Attitudes Test: an index of the symptoms of anorexia nervosa.* Psychol Med, 1979. **9**(2): p. 273-9.
2.	Williamson DA, A.D., Gleaves DH, *Anorexia nervosa and bulimia nervosa: Structured interview methodologies and psychological assessment*. 1996, American Psychological Association: Washington, DC.
3.	Sardahaee, F.S., et al., *Effects of single genetic variants and polygenic obesity risk scores on disordered eating in adolescents - The HUNT study.* Appetite, 2017. **118**: p. 8-16.
4.	Bjomelv, S., A. Mykletun, and A.A. Dahl, *The influence of definitions on the prevalence of eating problems in an adolescent population.* Eat Weight Disord, 2002. **7**(4): p. 284-92.
5.	Wichstrom, L., *Social, psychological and physical correlates of eating problems. A study of the general adolescent population in Norway.* Psychol Med, 1995. **25**(3): p. 567-79.
6.	Strand, B.H., et al., *Measuring the mental health status of the Norwegian population: a comparison of the instruments SCL-25, SCL-10, SCL-5 and MHI-5 (SF-36).* Nord J Psychiatry, 2003. **57**(2): p. 113-8.
7.	Tambs, K. and T. Moum, *How well can a few questionnaire items indicate anxiety and depression?* Acta Psychiatr Scand, 1993. **87**(5): p. 364-7.
8.	Hesbacher, P.T., et al., *Psychiatric illness in family practice.* J Clin Psychiatry, 1980. **41**(1): p. 6-10.
9.	Tambs, K., *Selection of questions to short-form versions of original psychometric instruments in MoBa.* Norwegian journal of epidemiology(norsk epidemiologi), 2014(24): p. 195-201.