6. Detection of Eating Disorders

Key Question:

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Eating disorders represent the third most common chronic disease in the adolescent patient population. Additionally, the three types of eating disorders (AN, BN and EDNOS) are amongst the three most common psychiatric diagnoses in adolescent females. Delayed identification of eating disorder patients leads to higher morbidity due to delayed treatment, and hence, worse prognosis. It is important to identify people at high risk of developing an eating disorder in order to tackle the disease at early stages and carry out an early intervention. To achieve this goal, involvement of primary care physicians is essential to detect symptoms and signs of suspected eating disorders.

There are few studies on the detection and diagnosis of eating disorders in PC. Data point to a situation of subdiagnosis, due to several reasons: scarce awareness of professionals regarding this issue, the lack of real time resulting from health care pressure that impedes providing better, more comprehensive care and preventive activities aimed at these patients, the low attendance of adolescents to primary care practices and their lack of “disease awareness”.

Given these circumstances, the appropriate use of a brief and validated screening instruments during healthy children/adolescent consultations and those prior to performance of sports would provide a good opportunity to apply prevention programmes for eating disorders, smoking, alcohol, drugs and safe sex in an integrated manner within a structured health maintenance programme from a family medicine approach.

There has been some confusion regarding the use of screening instruments. They are inefficient to establish an eating disorder diagnosis, but are useful tools for a quick initial assessment aimed at ruling out suspicious symptoms in the first phase of the two stage screening process, in which those patients who obtain high scores are newly assessed to determine if they fulfil formal diagnostic criteria.

To identify potential cases of eating disorders, several self-report screening questionnaires that enable systematic assessment of eating behaviour have been designed. All of these include questions regarding personal eating and dieting habits, weight, exercise, menstruation, body shape perception, self-image, self-esteem, drug use, relationship with the family and others, among other topics, given that most of the time patients with incipient eating disorders go to the doctor due to other symptomatology, such as weight loss, amenorrhea, depression, irritability, etc. Therefore, it is important to ask questions about these aspects.
Of all the proposed criteria and recommendations for the assessment of the screening instruments, some authors determine their use/relevance, development and psychometric properties and external validity to be the most important. Taking these considerations into account, and based on the results of an SRSE published by Jacobi, et al. (2004), only a few of the self-report instruments labelled as screening instruments for eating disorders fulfil the aforementioned criteria.

Of the screening instruments for identification of potential cases of eating disorders, four fulfilled the criteria established by the previous SRSE: BET (Branched Eating Disorders Test)\textsuperscript{154}, EDDS (Eating Disorder Diagnostic Scale)\textsuperscript{155}, SED (Survey for Eating Disorders)\textsuperscript{158} and SCOFF (Sick, Control, One, Fat, Food questionnaire)\textsuperscript{157}. Only the latter has an adapted version validated in our setting. At present there are no screening instruments that can differentiate between complete and partial eating disorders.

Only one screening instrument for AN, the EAT-40 and its versions (EAT-26 and ChEAT), has high sensitivity and specificity, but its positive predictive value (PPV) is low for identifying AN cases in the population. There are no questionnaires for screening of partial or subclinical cases of AN.

Of the three screening tools for BN: two-item screen\textsuperscript{158}, only BULIT and BITE have sensitivity and specificity values for BN. However, the specificity of these questionnaires to differentiate between BN and partial cases of BN and other eating disorders has not been clearly ascertained and population data are scarce.

The following section describes the tools used for detecting eating disorder cases that meet all recommended criteria to achieve this goal:

**SCOFF Survey**

*Sick, Control, One, Fat, Food questionnaire.*


The SCOFF is an eating disorder screening tool that consists of five yes/no questions that assess the loss of control over eating, purging and body dissatisfaction (See Annex 2.1), thus enabling its application in primary care. Scores range from 0 to 5 points (No=0 and Yes=1). A total score of 2 or more points identifies people at risk of having an eating disorder (AN sensitivity: 100%; BN: 100%; AN and BN specificity: 85% and 80%, respectively; false positive rate 7.3% for AN and 8% for BN)\textsuperscript{157}. Independent studies performed in primary care indicate sensitivity values that range between 78% and 85% and specificity values that range between 88% and 90%, with only affirmative answers\textsuperscript{159, 160}. These are excellent results, especially because the questionnaire is so brief. The reliability of the instrument when self-administered (written) or when administered by the physician (oral) was also assessed and results only evidenced minimal differences in SCOFF’s detection ability. However, the authors suggest that self-report responses may be more honest given that the patient’s confrontation with the interviewer is reduced\textsuperscript{161}.  


There is an adapted Spanish version that has been validated in our setting by García Campayo J, *et al.*, 2004 for early detection of eating disorders in primary care (women aged between 14 and 55 years with a cut-off point of 2 or more); sensitivity was 98% [95% CI: 93.5 to 99.5] and specificity was 94% [95% CI: 86.4% to 98.5%]. For each specific eating disorder, sensitivities for 94% specificity were as follows: BN, 98%; AN, 93%; and EDNOS, 100%. Limitations relating to the adaptation of item 1 have been identified. It is recommended to review these aspects before administering the Spanish version of SCOFF.

A Catalan version has also been adapted and validated in our setting (SCOFF-c) by Muro-Sans P, *et al.*, 2008 in a community sample comprised of Spanish adolescents (51% males and 49% females; mean age=14 years; SD=1.31). In this study sensitivity was 73% (95% CI: 63.2 to 82.9) and specificity was 94% (95% CI: 74.9 to 80.5). One of the possible reasons for low sensitivity is sample characteristics (Barcelona youth who were recruited in PC).

Of the numerous eating disorder screening questionnaires, results indicate the SCOFF survey can be a useful questionnaire given that it enables quick and easy primary care detection of eating disorder risk groups in the community. The SCOFF survey has been adopted as the standard screening instrument in the UK. Its characteristics also seem useful in monitoring the course of treatment (See Chapter 10, “Assessment”).

**EAT**


The EAT was designed for the assessment of disordered eating attitudes, especially those related with fear of gaining weight, the impulse to lose weight and the presence of restrictive eating patterns. Its intention was to devise an instrument that was easy to use and easy to correct and that was sensitive to symptomatic changes throughout time. The EAT is a self-report tool comprised of 40 items (EAT-40). Each item is valued in a 6-point Likert scale that ranges from “never” to “always”. Scores range from 0 to 120. It is a valid and reliable questionnaire that has been widely used in the assessment of eating disorders. With the 30 point or more cut-off point in a group of AN patients and a control group, sensitivity was 100% and specificity was 84.7%, with a PPV of 78.5% and a false-positive rate of 9.8%.

Other studies had revealed that the EAT test can be useful for the detection of AN cases that have not been previously diagnosed or to identify current or incipient cases of AN in high risk populations (ballerinas, model trainees, for example) with sensitivities, specificities and PPVs that range between 75% and 91.7%, 66.1% to 75% and 16% to 18.8%, respectively, with false-positive rates between 23.2% and 31.7%. Of all the different instruments that have been developed since the 70s up until today, the EAT-40 has been the most widely endorsed for the detection of eating disorders in the general population, and it is an instrument that seems valid to identify current or incipient cases of AN and BN, given its easy application, high reliability, sensitivity and transcultural validity.
Spanish version of the EAT-40

In Spain, the adapted version of the EAT-40 that was validated in our setting was carried out by Castro J, et al. 1991 in an AN group and healthy control group (See Annex 2.2). Using the 30-point cut-off point recommended by the original authors, sensitivity was 68% and specificity was 86%. Among the possible causes that may explain differences with the original version, the fact that Spanish anorexic patients were younger must be highlighted. When it was validated in a sample of 18-year old women using the questionnaire by Castro J, et al. and the 30-point cut-off point, sensitivity was 75%, specificity was 97.1% and PPV was 36%.

In Navarra, another study to validate the adaptation by Castro J, et al. after an 18-month follow-up was performed on a representative sample of adolescent students who did not attend the doctor’s office but came from the general population instead, once prevalent cases of eating disorders were excluded. With a cut-off point of 20 points, better diagnostic prediction was obtained (73% sensitivity and 85% specificity). PPV was 20% and the negative predictive value (NPV) was 98%.

From these results we can conclude that the EAT-40 is an adequate questionnaire for early detection of eating disorders in the general population, even if its PPV is low. However, despite using screening instruments it is always necessary to conduct individual interviews to confirm diagnoses of eating disorders. The fact that eating disorders are presented in a grading and severity continuum makes it essential to have a procedure that enables the detection of early signs to ensure a prompt intervention.

EAT-26 (Abbreviated version of the EAT-40)

Garner DM, et al., 1982 created the 26-item version of the EAT-40 by performing a factor analysis of the latter. The EAT-26 is highly predictive of the complete version (r=0.89). It consists of the first 26 items of the EAT-40, configuring three subscales: diet, bulimia and concern over eating and oral control. It is assessed using the same 6-point Likert scale as the EAT-40. Answer scores range from 0 to 78. It is a self-report questionnaire. Using a cut-off point of 22 points or more, the range of sensitivities, specificities and PPVs was 65.1% to 88.9%, 96.1% to 97.7% and 44.4% to 46.2%, respectively, the false-positive rates ranging from 2.7% to 3.8%.

Spanish version of the EAT-26

The Spanish validation of the EAT-26 in our setting was carried out by Gandarillas A, et al., 2003 in a community setting on a female student population (15-18 years) (See Annex 2.3.). The psychometric characteristics of this questionnaire are similar to those described by their authors. For a 20-point or more cut-off point, sensitivity is 59%, specificity is 93%, PPV is 23%, NPV is 99% and the percentage of correctly classified subjects is 92%. As a screening questionnaire it is useful to differentiate eating disorder cases from the normal population, although it is important to mention the scarce PPV, given the low prevalence of the problem.

When the cut-off point is lower (10 points or more), the EAT-26 presents 90% sensitivity,
75% specificity, 11% PPV, 99.5% NPV and a percentage of correctly classified subjects of 76%

The MSC already recommended its use as a screening tool back in 1995 because the EAT-26 was able to distinguish between AN patients and normal population and between BN patients and normal population, but not between restrictive AN and BN, establishing a cut-off point of <20 points in women, >30 in high risk population and >50 in clinical population.

ChEAT (Child version of the EAT-26; Children Eating Attitudes Test)

Maloney MJ, et al., developed the ChEAT 1988, with the aim of detecting comprehension problems in children. When these problems were resolved by substituting certain words with simpler synonyms, validity and reliability results in a sample of children between the ages of 8 and 13 years were comparable to those published for adults (EAT-26), making the ChEAT a self-report questionnaire that can be administered starting at 8 years of age (it does require a 5th grade reading level in order to answer), which can aid in the assessment of concern over food, eating models and attitudes regarding food at these ages. A total score of 20 points in the upper scale would indicate the possible presence of an eating disorder.

Spanish version of the ChEAT (Children’s Eating Attitudes Test)

The Spanish adaptation and preliminary validation of the ChEAT has been carried out by de Gracia M, et al., 2008 on a sample of girls and boys between the ages of 8 and 12 years. Reliability and validity results of the Spanish adaptation are analogous to the original study (See Annex 2.4.).

The Catalan version of the ChEAT has also been adapted and validated in our setting in a sample of students (5th and 6th grades). Results indicate that the Catalan version is reliable. However, it is recommended that the cut-off point be lower than that established by the original authors, as was already suggested by the authors of the Spanish adaptation, given that it increases the number of subjects at risk of developing an eating disorder that may be detected at school.

BULIT Bulimia Test


The BULIT was designed with the objective of addressing certain needs detected in the assessment of BN, such as distinguishing BN patients from people without eating disorder problems; BN patients from patients with other eating disorders, and BN sub-groups based on specific criteria. It consists of 32 items (plus four informative type items relating to laxative abuse, use of diuretics, as well as amenorrhoea) that are distributed in five dimensions (binge-eating episodes or lack of control over meals, discomfort, vomiting, type of food and weight fluctuation). Each item is scored using a 5-point Likert scale (ranging from 1 to 5). In several items the most symptomatic answer is presented at the end rather than at the beginning to prevent a bias in the response, due to presentation order. The sum of all items (except the purely informative ones) leads to an overall score ranging from 32 to 160 (a higher score indicates greater intensity of bulimic symptomatology). Likewise, the sum of items corresponding to each
of the five dimension results in the overall scores for each one of these dimensions. An overall score and five scores corresponding to each dimension are therefore obtained. Data derived from the original version indicates that it is a reliable, valid and objective instrument to identify individuals with bulimic symptoms, confirming its use to detect those individuals who present or who are at risk of developing BN in the general population. With a cut-off point of 102 points or more, sensitivity, specificity, PPV and NPV were 95%, 98%, 91% and 99%, respectively.

Spanish version of the BULIT

In Spain, the adapted version of the BULIT validated in our setting was developed by AJ Vázquez, et al., 2007 in a group of people, mainly females between the ages of 13 and 54 years, who attended mental health centres (See Annex 2.5.). Results solidly support the reliability and validity of the Spanish version of the BULIT, highlighting its use to identify BN cases, as well as to quantify the severity of bulimic symptoms. With a cut-off point of 88, it leads to a 90% correct classification of individuals with BN, and a 100% correct classification of individuals without eating disorders, data that firmly endorse its use as a screening instrument.

BULIT-R (Revised version of the BULIT)

Later, the revised version of the BULIT (BULIT-R), developed by Thelen, et al., 1991 was obtained, its most important contribution being the adaptation to DSM-III-R and later DSM-IV criteria. It is comprised of 36 items, even though only 28 are used to determine the final score that ranges between 28 and 140 points. The estimated administration time of the instrument is 10 minutes. It is highly correlated with the original version (r=0.99). In a sample of nursing students and with a cut-off point of 104 points or more, sensitivity, specificity, PPV and NPV of the BULIT-R was high: 80%, 99.5%, 80% and 99.5%, respectively.

Spanish version of the BULIT-R

In Spain, the adapted version of BULIT-R validated in our setting was carried out by MN Berrios-Hernández, et al., 2007.


The BITE is a self-report questionnaire completed in 10 minutes or less that is designed to identify subjects with bulimic symptoms (BN or BED). It consists of 36 items that configure two subscales: the symptoms scale (assesses the number and degree of existing symptoms; 30 items; highest score: 30; cut-off point: 20 points or more) and the severity scale (provides a disorder severity index based on the frequency with which pathological behaviours take place; 6 items; highest score: 39; cut-off point: 5 points or more). A total score of 25 or more points indicates the presence of a serious eating disorder. In the sample of bulimic women and control group the cut-off points used were as follows: >25 for the complete questionnaire, >20 for the symptoms subscale and/or >5 points for the severity scale. With these cut-off points, the BITE demonstrated perfect sensitivity, specificity and PPV (100%, 100% and 100%, respectively), even though data on its use in the population are not known.
Spanish version of the BITE

The adapted version validated in our setting was developed by T Rivas, et al., 2004\[81\] (See Annex 2.6).

The Spanish version of BITE was administered to a sample of adolescents aged between 12 and 21 years from different schools. Using cut-off points based on DSM-IV criteria for BN, high specificity and a much lower sensitivity than that found in clinical samples were obtained. Furthermore, the scores in the BN group were higher than in other eating disorders and in the group without eating disorders. Therefore, this instrument can be used for early detection of individuals who may present an eating disorder in the general population. It is also used to assess disease intensity and response to treatment.

Recommendations

| D | 6.1. | Target groups for screening should include young people with low body mass index (BMI) compared to age-based reference values, patients consulting with weight concerns without being overweight or people who are overweight, women with menstrual disorders or amenorrhoea, patients with gastrointestinal symptoms, patients with signs of starvation or repeated vomiting, and children with delayed or stunted growth, children, adolescents and young adults who perform sports that entail a risk of developing an eating disorder (athletics, dance, synchronised swimming, etc.). (Adapted from recommendation 5.2.5.3 of the NICE CPG). |
| D | 6.2. | In AN, weight and BMI are not considered the only indicators of physical risk. (Adapted from recommendation 5.2.5.6 of the NICE CPG). |
| D | 6.3. | Early identification and intervention of individuals presenting weight loss are important to prevent the development of severe emaciation. (Adapted from recommendation 6.6.1.2 of the NICE CPG). |
| D | 6.4. | In the case of suspected AN, attention should be paid to overall clinical assessment (repeated over time), including rate of weight loss, growth curve in children, objective physical signs and appropriate laboratory tests. (Adopted from recommendation 5.2.5.7 of the NICE CPG). |
| ✓ 6.5. | It is recommended to use questionnaires adapted and validated in the Spanish population for the detection of eating disorder cases (screening).

The use of the following tools is recommended:
Eating disorders in general: SCOFF (for individuals aged 11 years and over)
AN: EAT-40, EAT-26 and ChEAT (the latter for individuals aged between 8 and 12 years)
Bulimia nervosa (BN): BULIT, BULIT-R and BITE (all for individuals aged 12-13 years and over) |
| ✓ 6.6. | Adequate training of PC physicians is considered essential for early detection and diagnosis of eating disorders to ensure prompt treatment, or referral, when deemed necessary. |
| ✓ 6.7. | Due to the low frequency of consultations during childhood and adolescence, it is recommended to take advantage of any opportunity to provide comprehensive care and to detect eating disorder risk habits and cases. Eating disorder risk behaviour, such as repeated vomiting, can be detected at dental check-ups. |
| ✓ 6.8. | When interviewing a patient with a suspected eating disorder, especially if the suspected disorder is AN, it is important to take into account the patient’s lack of awareness of the disease, the tendency to deny the disorder and the scarce motivation to change, this being more pronounced in earlier stages of the disease. |
| ✓ 6.9. | It is recommended that different groups of professionals (teachers, school psychologists, chemists, nutritionists and dieticians, social workers, etc.) who may be in contact with at-risk population have adequate training and be able to act as eating disorder detection agents. |