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Prevalence of eating disorders in early adolescent students

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Objective. To measure the prevalence of Eating Behavior Disorders (EBD) in Spanish Early-Adolescent students using standardized methods.

Methods. A two-stage survey of prevalence of EBD in a representative sample of 12 to 13 year old students in 2007 in Zaragoza (Spain). Standard evaluation: We used a two-phase cross-sectional design, which involved screening with questionnaires (EAT at a cutoff score of 20) and subsequent semi-structured interviews (SCAN) of screen-positive and screen-negative subjects. We calculated the sociodemographic characteristics, EBD prevalence with their 95% confidence intervals (CI) with Confidence Interval Analysis (C.I.A.) disk version 2.0.0 (Altman et al., 2000). The study was financed by F.I.S. PI 05/2533 (Spain Health Department).

Results. In 2007 we studied 701 male and female, ages 12 to 13, seventh-grade students in 9 public and private schools in Zaragoza (30 classrooms). In the second phase, 164 early adolescents agreed to participate in the clinical evaluation (63 at risk, high scorers; 101 selected sample not at risk). EBD prevalence was 0.7% unspecified eating behavior disorders (UEBD) 50.9 (95% CI: 0.3%-1.7%).

Conclusion. The ICD-10 point prevalence rates of EBD population in Spanish Early-Adolescent students are similar to those reported for other developed countries. The prevalence of subclinical EBD is substantially higher than that of full-syndromes.

Key words:

Eating disorders, epidemiology, prevalence, adolescence.

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Prevalencia de trastornos alimentarios en estudiantes adolescentes tempranos

Introducción. Objetivos: medir la prevalencia de los trastornos de la conducta alimentaria (TCA) en adolescentes tempranos zaragozanos con métodos estandarizados.

Métodología. Estudio de corte en dos estadios de prevalencia en una muestra representativa de estudiantes españoles de 12 a 13 años en 2007 en colegios de Zaragoza. Evaluación estándar: diseño de corte en dos estadios con cribado con cuestionarios autocumplimentados (EAT-26 con punto de corte de 20) y entrevista individual semiestructurada (SCAN) de sujetos con criba positiva y negativa. Se calculan las características sociodemográficas, prevalencia de TCA con sus intervalos de confianza 95% (CI) con Confidence Interval Analysis (C.I.A.) disk version 2.0.0 (Altman et al, 2000). El estudio se financia con fondos F.I.S. PI 05/2533.

Resultados. En 2007 se estudia 701 alumnos de 1º de Enseñanza Secundaria Obligatoria, de 12 y 13 años, chicos y chicas, en 9 centros de secundaria públicos y privados concertados (30 aulas) en Zaragoza (Spain). En la segunda fase 164 adolescentes aceptan proceder a la evaluación clínica (163 con riesgo, altas puntuaciones en EAT-26; 101 seleccionados de la muestra sin riesgo). La prevalencia puntual de TCA es el 0,7% de Trastornos Conducta Alimentaria no especificados (TCANE) F 50.9 (CI 95%: 0,3%-1,7%).

Conclusiones. Las tasas de prevalencia puntual de TCA CIE-10 en la población zaragozana de estudiantes adolescentes tempranos es similar a la publicada en otros países desarrollados. La prevalencia de TCA subclínicos o atípicos que no cumplen todos los criterios diagnósticos es sustancialmente mayor que los síndromes completos.

Palabras clave:

Trastornos de la conducta alimentaria, epidemiología, prevalencia, adolescencia.

INTRODUCTION

Eating behavior disorders (EBD) is an extremely difficult condition to treat and the patients consume an enormous amount of mental health energy and resources. Important advances have been achieved in understanding the neuroendocrine mechanisms that regulate appetite and intake. These achievements clearly contrast with the limited progress in elucidating the pathogenesis of EBD and developing effective preventive treatment and interventions¹.

The epidemiology of eating disorders in our country is a research area that has advanced from nothing to infinite in just a few years. We have gone from having hardly any reliable data in one decade to probably being the European nation with the most work groups and methodologically rigorous studies in the general adolescent and young population. More than repeating similar studies in all of the regional communities, the future pathway that would be the best would be to advance in more unknown areas: childhood, adults, males and in the study of the risk factors. There are not many two-phase Spanish studies that have included early adolescent subjects, which is why it is interesting to investigate this age group^{2,3}.

After an epidemiological study of EBD in 1997 in Zaragoza in an extensive stratified representative community sample of 4047 Spanish subjects from 12 to 18 years with standardized methods (in two stages), which found a 4.51% prevalence of EBD among the women studied^{2,3}, a prospective study was initiated beginning in 1999 to examine the effect of a controlled school program the prevention of EBD. The ZARIMA Prevention group, a multidisciplinary team that has been working with EBD since 1995, has developed a community action program that promotes mental health regarding primary and secondary prevention (included in the Directory of Projects in Europe, Mental Health Promotion of Adolescent and Young People, M.H.E. financed by the European Commission)⁴, in collaboration with the Association of families of EBD (ARBADA) and the Consejo Nacional Juventud Aragón (National Youth Council of Aragón) (CJA), declared to be of health care interest and financed by the Health Department of the Aragón government and the Fondo de Investigación Sanitaria (Health Care Research Fund) (Spain).

Within this project continuing over time, an early detection of EBD study was performed in 2007 in adolescents in the first year of secondary school, their data being presented herein.

This epidemiologic and secondary prevention study was carried out in the school setting for several reasons: first, our primary goal was to detect eating disorders in a community setting (in the "real world"). It was also because of the easy access to young students at risk because of their

age. Adolescents spend one fourth of their time at school. The schools are often the most accessible educational and social institutions for the intervention⁵. Thus, viability is the primary argument for the role of the school and the preventive work⁶.

Prevalence studies invariably show that there are more cases of EBD in the school populations than those revealed by the clinical research³. The earlier the treatment is begun, the better the prognosis. That is why early detection is important in the educational community.

This study evaluates the epidemiological results of our screening program, seeking secondary prevention of the EBDs.

General objective

Epidemiology of EBD in early-adolescents (Obligatory Secondary Teaching - first year).

Specific objectives

1. Evaluate the population at risk of EBD in the first year of secondary school.
2. Calculate the rate of point prevalence (ICD-10, DSM-IV-TR).
3. Detect cases of EBD early in the pre-adolescent or early adolescent population.

Work hypothesis

- The population at risk of EBD prevalent cases found among the early-adolescent population of Zaragoza of our community will not differ significantly from the previous results found another Spanish and international research works.
- Most of the EBD cases that will be found will be unspecified or atypical.

METHODOLOGY

Design

A cutoff or prevalence study design in two stages or phases was established.

Sample

The original randomized cluster sample (classrooms) consisted in 750 students from public and private charter secondary schools of Zaragoza (Spain) with at least 2 classrooms of the first year of secondary school in each

school. In order to calculate the sample size needed, we wanted to estimate the measurement with a maximum possible error (e) of 2%) and 99% confidence interval (1-alpha). The estimated prevalence of EBD in Zaragoza according to our previous study was 4.5%. The necessary sample size would be 713 subjects. As each classroom had a mean of 25 students, 30 classrooms would be necessary for a sample of 750 students. These should be randomly selected with the data of the Department of Education of our community with a stratified cluster sample.

Standard evaluation

Standardized psychological measurements were used. A double phase procedure was used to identify prevalent cases of EBD with ICD-10, DSM IV-TR diagnostic criteria. Screening was carried out with validated questionnaires (Eating Attitudes Test, EAT-26)⁷ and after with semi-structured interviews (Schedules for Clinical Assessment in Neuropsychiatry, SCAN)⁸. A two-stage cutoff designed was used with screening and interviews of positive and negative subjects. In the first phase, a self-administered questionnaire was used to detect the population with risk of EBD. Skilled investigators administered the Spanish version of the Eating Attitudes Test (EAT-26). In the second phase, a semi-structured interview was performed for those considered to be at risk in the first phase and a sample of the negative ones. One psychiatrist or clinical psychologist, an expert investigator in EBD, and trained in this interview, administered the SCAN blinded to the condition of the student evaluated at the onset.

Data collection. Work field

Written informed consent was obtained from the young person and his/her father- mother/Guardian. The relevant ethical institutional approvals were obtained from the Ethics Committee of Aragon (AEC). The principles of the Declaration of Helsinki and Belmont Report were followed. All the questionnaires were anonymous, using a number code with a card with the personal data if the adolescent was chosen for the second phase. If an EBD was diagnosed during this phase, the diagnosis and treatment were provided in our specialized units of reference for all of the Community of Aragon. We prepared a detailed instruction manual and we standardized the procedure of the teams that came to the schools (from September to December 2006). An attempt was made to unify the information given in the classrooms, and the way of collectively administering the questionnaires and the measurement of weight and height with portable high precision scales and stadiometer scales individually for each student, separately from the rest of their classmates. Training in individual semi-structured clinical interviews was also made. The work field was from January to April 2007, as this was the most appropriate due to the school schedule.

Data analysis

We calculated these sociodemographic characteristics, EBD prevalence with their 95% confidence intervals (CI) with the Confidence Interval Analysis (C.I.A.) disk version 2.0.0⁹. We used the recommended method (Wilson) with less than 30 in each group or if the proportions observed were outside of the range of 0.1 to 0.9⁸.

RESULTS

In 2007, 701 students from the first year of Obligatory Secondary Education, from 12 to 13 years, boys and girls, in private and public secondary school centers (30 classrooms), in Zaragoza (Spain) were studied.

A total of 701 students out of a possible 750 from 9 centers in Zaragoza (30 classrooms) participated voluntarily in the first phase: 340 women and 361 men, this meaning a participation of 93.5%.

In the first phase, 63/701, 9% of the adolescents were classified at risk of EBD (high scores, above the cutoff, $>$ or $=$ 20 on the EAT-26) with a 95% CI with the Wilson recommended method between 0.071 and 0.113 and standard error (SE) of 0.011.

In the second phase, 164 adolescents out of the 167 selected (98.2% of those selected, 23% of the total sample) agreed to begin with the clinical evaluation by interview with a psychiatrist or clinical psychologist expert in EBDs. Of the sample, 63 adolescents were at risk, with high scores on the EAT-26 and 101 of those selected for the sample were without risk, with scores on the EAT-26 of 0 or 1, which accounts for 14.40% of the total sample. Very few students did not participate because of absenteeism (2 students) or transfer to another school site (3 students): a total of 5 students: 2 males and 3 females.

In Zaragoza, we found 5 cases of unspecified Eating Behavior Disorders (UEBD), atypical or subclinical, among the 701 students studied after performing 164 interviews: 63 interviews with risk and 101 without risk.

Table 1		Risk and Prevalence of EBD by gender		
Gender	EBD Risk (%)	95% CI (SE)	EBD Prevalence (%)	95% CI (SE)
Women	35/340 (10.3%)	7.5%-14% (0.016)	5/340 (1.5%)	0.6%-3.4% (0.007)
Men	28/361 (7.8%)	5.4%-11% (0.014)	0/361 (0%)	0%-1.1% (0.000)

Table 2		Two-phase studies of EBD prevalence in Spain in the XX Century				
Study	Date	City	Age	N	Instruments	Prevalence %
Morandé et al (10)	1985, 1986, 1987	Madrid	X=15 y	636 F 86 M	EAT, GHQ	Women 1.55% TCA Men 0% TCA
Morandé et al (11,12,13)	1993, 1994	Móstoles	X=15 y	725 F 520 M	EDI, GHQ	Women 0.69% AN. 1.24% BN. 2.76% TCANE. 4.69% TCA Men 0.0% AN. 0.36% BN. 0.54% TCANE. 0.90% TCA
Canals et al (14)	1997	Reus	17-18 y	152F 138M	EAT SCAN	Women 5.2% TCA CIE-10. 2.6% TCA DSM-III-R Men 0% TCA
Ruiz-Lázaro et al (15, 16, 17)	1997	Zaragoza	12-18 y	2193 F 1854 M	EAT-40, EDI, CIMEC SCAN	Women 0.14% AN. 0.55% BN 3.83% TCANE. 4.5% TCA
Pérez-Gaspar et al (18) Gual et al (19, 20)	1997	Navarra	12-21 y	2862 F	EAT-40	Women 0.31% AN. 0.76% BN 3.07% TCANE. 4.1% TCA
Rojo et al (21, 22, 23)	1999	Valencia	12-18 y	544	EAT-40 SCAN, DSM-IV criteria	Women 0.45% AN. 0.41% BN 4.31% TCANE. 5.17% TCA Men 0.77% TCA
Imaz et al (24, 25, 26)	1999	Valladolid	12-18 y	3434	GHQ-28, EDI-2 SCID	Women 0.88% AN. 0.37% BN 3.86% TCANE. 5.26% TCA Men 0.11% AN. 1.59% TCANE. 1.7% TCA

Prevalences by gender with their 95% confidence intervals are shown in Table 1.

The difference between the population at risk of EBD between men and women was 2.5% with a 95% CI for the difference between the two population proportions between -0.017 and 0.069 (with a SE of 0.22) that included 0, the value of equality, and that was not statistically significant.

The point prevalence of EBD found between this early adolescent population sample was 5/701, 0.7% of UEBD, atypical or subclinical EBD, 5 cases that fulfilled the diagnostic criteria of F 50.9 ICD-10, DSM-IV-TR (95% confidence interval calculated with the recommended Wilson method with the CIA disk version 2.00: 0.3%-1.7%). The standard error was 0.003.

All the cases detected were found in the population at risk (EAT-26 with the high score greater than or equal to the cutoff of 20). No case was detected among the students with scores of 0 or 1 on the EAT-26.

Among the cases diagnosed, none were under medical or psychological treatment for their EBD nor had it been detected by the family setting or the educational community prior to this secondary prevention community study.

The difference between the population with EBD between the men and the women is 1.5% with a 95% CI for the difference between the two population proportions between 0.001 and 0.034 (with a SE of 0.007) that did not include 0, the value of equality, and that was statistically significant.

DISCUSSION

Significant advances have been carried out in the research of the epidemiology of EBD in Spain. Based on recent studies (tables 2 and 3)¹⁰⁻³⁷, and in spite of their methodological limitations³⁸, it has been suggested that the prevalence of abnormal eating behaviors and attitudes in Spanish nonclinical populations does not significantly differ

Table 3		Two phase studies of EBD prevalence in Spain in the XXI Century				
Study	Date	City	Age	N	Instruments	Prevalence %
Beato et al (27, 28, 29)	2000-2001	Castilla La Mancha	15 y	1076	GHQ-28, EAT-40, BITE, BSQ, SCAN	Women 6.4% TCA Men 0.6% TCA
Gandarillas et al (30, 31)	2002	Madrid	15-18 y	1238 F	EDI-I, EAT-26, EDE-12	Women 0.6% AN. 0.6% BN. 2.1% TCANE. 3.4% TCA
Peláez et al (32, 33)	2002	Madrid	12-21 y	1543	EAT-40, EDE-O, EDE	Women 0.11% AN. 2.29% BN 2.73% TCANE. 5.13% TCA Men 0.0% AN. 0.16% BN 0.48% TCANE. 0.64% TCA
Arrufat (34)	2006	Osuna	14-16 y	1147 F 1133 M	EAT-26 CDRS DICA-IV	Women 0.35% AN . 0.44% BN TCANE 2.7%. 3.49% TCA Men 0.0% AN. 0.09% BN TCANE 0.18%. 0.27% TCA
Muro y Amador (35, 36)	2006	Barcelona	10-17 y	1155	EDI-2 EDE-12	Women TCANE 2.31% TCA Men TCANE 0.17% TCA
Sancho et al (37)	2007	Tarragona	X=13,4	1336	ChEAT DICA-C DICA-P DICA-A	DICA-C 3.44% TCA DICA-A 3.81% TCA

from that described in other developed countries. Our study joined these findings.

The wide range of variation in the prevalence rates of EBD published in adults and adolescents may be related with the methodological problems inherent to this type of investigation. Anorexia nervosa and the related EBD are more frequently investigated in adolescent girls and young women and many investigators have dealt with the prevalence in this high risk group³.

The self-administered or self-report questionnaires, above all, serve to detect minor deviated eating behaviors. True anorexias or bulimias can only be diagnosed through clinical interview³. In this study, the diagnosis was only reached after the interview by a clinician who was experienced and trained in the procedure.

Good epidemiological studies have not been made with child, early adolescent or male populations. The last work in Barcelona by Pilar Muro in the early adolescent population stands out with 13.16% of the sample of 1,115 male and female participants with an age between 10 and 11 years of age^{35, 36}. Their study, as ours, only found UEBD, subclinical or atypical disorders that did not fulfill all the

diagnostic criteria, which were substantially superior to the complete or typical cases that met all the criteria in these ages³⁷.

Our previous study in Zaragoza² and that of Pérez-Gaspar in Navarra in 1997¹⁸, those of Rojo in Valencia²¹ and Imaz in Valladolid^{24, 25} in 1999, that of Peláez in Madrid in 2002 and that of Sancho in 2007³⁷ in Tarragona are the only Spanish ones in two phases up to date that include early adolescents within the population studied. The prevalence levels of UEBD found do not differ greatly from our results if the methodological differences for the detection of cases are taken into consideration.

The works having the best methodological quality published are the two-phase cross-sectional studies of the third generation of psychiatric epidemiological research of Dohrenwed and Dohrenwed, the most accepted methodology, the best design for the detection of cases in the community as well as being a relatively efficient means to calculate the prevalence of psychopathology². Using a diagnostic interview in the second phase as a reliable method for case detection is important³⁸. Two-phase studies are "economical" as they do not interview all the subjects of the sample, but they also have some disadvantages and biases precisely for that reason³⁹.

Our research was conducted in two stages of point prevalence and was performed in a large and representative sample after random cluster stratified sampling of 701 early adolescent male and female adolescents from 30 classrooms of 9 public and private charter schools of Zaragoza, which gives representativeness and validity to our data.

In this early age, the population at risk of EBD did not show a statistically significant difference between men and women, which agrees with our 1997 data^{2, 40, 41}.

Both the population at risk and a large subsample of the population without risk were interviewed individually in the second phase to try to avoid frequent false negatives among the EBD population that tends to minimize or deny their symptoms in the self-filled out questionnaires, by falsifying or hiding their symptoms. That is precisely why the interview is made at the lowest scores (0 and 1). Using this procedure, an attempt is made to minimize underestimation of the data of the EBD prevalence among the population sample studied. In almost all the Spanish two phase works, as in most of the international ones, the study of the existence of false negatives is lacking, the interview diagnoses a sample of probable controls and this may underestimate the real prevalence of the disorder^{29, 38}. This methodological problem is not surprising since this study of false negatives means a significant personal, organizational and economical effort, an effort that has been made in this study.

The high percentage of participation in the second phase of 98.2% of those selected is significant. The diagnosis is made with the DSM-IV-TR and the ICD -10 criteria, with the two international classifications in force. And the structured interviews, performed by the psychiatrist or clinical psychologist, are always face-to-face, never by telephone⁴².

As observed in other studies between the cases diagnosed, none were under treatment or had been detected by their family or teachers prior to this community study of secondary prevention. That is why early detection campaigns in the community are important.

Limitations

This study has some important limitations, as in any epidemiological research, that are difficult to correct.

Using the EAT-26 as a screening questionnaire may be questioned even though a validated version to Spanish was used, given the tendency to denial, to secrecy and lack of motivation regarding treatment of EBD patients who may hide their attitudes and abnormal eating behaviors on a self-filled out questionnaire. The only way to avoid this bias completely would be by applying the clinical interview to

the entire sample. However, this would increase costs and exceeds our possibilities as a research team.

We have preferred to use the EAT-26 over the Children Eating Attitudes Test (ChEAT) or the "Kid's eating disorders survey (KEDS), recently validated into Spanish⁴³, because of our previous experience on its use in epidemiological research of the EBDs in Spain.

Criticisms can also be made about the selection of the individuals in the second stage with minimum extreme scores, instead of a random selection of subjects with scores under the cutoff of the EAT-26, which would be the best for the detection of false negatives. This design decision may bias the results and underestimate the prevalence as it misses possible cases close to the cutoff of the EAT. This is a serious limitation of this study. The decision to interview the 0 and 1 was made because of the already-mentioned tendency to lie by patients with EBD in the self-filled out questionnaire studies demonstrated in several investigations and verified in the clinical practice¹⁶.

Another problem is the application of the categorical diagnostic criteria of the international classifications in the community in which subclinical cases predominate within a spectrum where it may sometimes be difficult to establish the limits between normal and pathological. The cases diagnosed in this study strictly fulfill the diagnostic criteria of the UEBD of the international classifications in force and have been re-evaluated in our specific EBD unit, verifying the community diagnosis.

There is a greater proportion of EBD cases among the subjects that refused to participate in the investigations on the EBDs than among the sample that responded^{2, 39}. Our rates are probably somewhat underestimated for this reason. Although a high 93.5% participated, some undetected cases may be found among the remaining 6.5%. The bias of non-response gives rise to a difference between the initially estimated sample and that finally obtained. The magnitude of this difference may have a great influence on the validity of the results¹⁶.

Given the low prevalence of the EBD among males, it is not surprising that we did not find any case with this sample size, which would need to be greatly increased in size in order to increase the likelihood of finding a male with an eating disorder³⁹.

Another bias is that no population without schooling was included in the sample. We have left a part of the population without study. However, given their difficult accessibility (as they are a marginal population, immigrants from certain ethnic groups and social classes) and the human and material costs that this could mean, we consider that the loss of information that would be obtained from their non-inclusion is assumable¹⁶.

CONCLUSIONS

The point prevalence rates of the EBD ICD-10, DSM-IV-TR in the Spanish Zaragoza population of early-adolescent students is similar to that published in other developed countries, in other Spanish studies^{44, 45}. The prevalence of subclinical or atypical EBDs that do not meet all the diagnostic criteria is substantially greater than the complete syndromes.

The revision of the studies published up to date in our country agrees with our data and indicates that the magnitude of the impact of the EBDs is clearly established and is a relevant and even worrisome health problem in the early-adolescent female population⁴⁶. Unspecified or atypical cases seem to be the most frequent. The prevalence studies invariably show that there are more cases in the school-aged populations than those disclosed by the clinical investigations. Thus, control devices of secondary prevention for the population at risk and of the cases should be developed in the community such as that which we are presenting. Given the prevalence observed, the primary and secondary prevention services need to be improved^{25, 47}.

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REFERENCES

- Vitiello B, Lederhendler I. Research on eating disorders: current status and future prospects. *Biol Psychiatry* 2000; 47: 777-86.
- Ruiz-Lázaro PM, Alonso JP, Comet P, Lobo A, Velilla M. Epidemiology of Eating Disorders in Spain. In: Swain PI, Editor. *Trends in Eating Disorders Research*. New York: Nova Publishers, 2005; p.85-108.
- Ruiz-Lázaro PM. Epidemiología de los trastornos de la conducta alimentaria en España, *Actas Esp Psiquiatr* 2003; 31: 85-94.
- Ruiz-Lázaro PM. Prevention of Eating Disorders in Adolescence: Zarima-Prevention. In: *Mental Health Europe. Directory of Projects in Europe. Mental Health Promotion of Adolescents and Young People*. Brussels: Mental Health Europe, 2001; p. 76.
- Seif-El Din A. Prevention and Intervention in School Settings, In: Renschmidt H, Belfer ML, Goodyer I, Eds. *Facilitating Pathways, Care, Treatment and Prevention in Child and Adolescent Mental Health*, Berlin: Springer-Verlag, 2004; p. 326-34.
- Vandereycken W, Noordbos G. *The Prevention of Eating Disorders*. London: The Athlone Press, 1998.
- Castro J, Toro J, Salamero M, Guimerá E. The "eating attitudes test": validation of the Spanish version, *Psychol Assess* 1991; 7: 175-90.
- Vázquez-Barquero JL, Gaité J, Artal J, Arenal A, Herrera S, Díez JF, Cuesta MJ, Higuera A. Desarrollo y verificación de la versión española de la entrevista psiquiátrica "Sistema SCAN" ("Cuestionarios para la Evaluación Clínica en Neuropsiquiatría"). *Actas Luso-Esp Neurol Psiquiatr* 1994; 22: 109-20.
- Altman DG, Machin D, Bryant TN, Gardner MJ. *Statistics with confidence*. 2nd edition. Bristol: BMJ, 2000.
- Morandé G. Trastornos de la alimentación en niños y adolescentes. En: Romero AI, Fernández A, Eds. *Salud Mental. Formación continuada en Atención Primaria*. Madrid: IDEPSA, 1990; p. 121-30.
- Morandé G. Trastornos de la conducta alimentaria en adolescentes. ¿Una epidemia? *An Esp Pediatr* 1998; 48: 229-32.
- Morandé G, Casas J. Trastornos de la conducta alimentaria en adolescentes. Anorexia nerviosa, bulimia y cuadros afines. *Pediatr Integral* 1997; 2: 243-60.
- Morandé G, Celada J, Casas JJ. Prevalence of Eating Disorders in a Spanish School-Age Population. *J Adolesc Health* 1999; 24: 212-9.
- Canals J, Domènech E, Carbajo G, Bladé J. Prevalence of DSM-III-R and ICD-10 psychiatric disorders in a Spanish population of 18-years-old. *Acta Psychiatr Scand* 1997; 96: 287-94.
- Ruiz-Lázaro PM. Prevalencia de trastornos de la conducta alimentaria en España. *An Esp Pediatr* 1998; 49: 435-6.
- Ruiz-Lázaro PM. Trastornos de la conducta alimentaria en una muestra representativa de adolescentes de Zaragoza (tesis doctoral). Zaragoza: Universidad de Zaragoza, 2000.
- Ruiz PM, Alonso JP, Velilla JM, Lobo A, Martín A, Paumard C, Calvo AI. Estudio de prevalencia de trastornos de la conducta alimentaria en adolescentes de Zaragoza. *Rev Psiquiatr Infanto-Juv* 1998; 3: 148-62.
- Pérez-Gaspar M, Gual P, de Irala-Estévez J, Martínez-González MA, Lahortiga F, Cervera S. Prevalencia de trastornos de la conducta alimentaria en las adolescentes navarras. *Med Clin (Bar)* 2000; 114: 481-6.
- Gual P, Pérez-Gaspar M, Martínez González MA, Lahortiga F, de Irala-Estévez J, Cervera-Enguix S. Self-esteem, personality, and eating disorders: Baseline assessment of a prospective población based cohort. *Int J Eat Disord* 2002; 31: 261-73.
- Lahortiga F, De Irala J, Cano A, Gual P, Martínez MA, Cervera S. Incidence of eating disorders in Navarra (Spain). *Eur Psychiatry* 2005; 20: 179-85.
- Rojo L, Livianos L, Conesa L, García A, Domínguez A, Rodrigo G, Sanjuan L, Vila M. Epidemiology and Risk factors on Eating Disorders: A two-stage Epidemiological Study in a Spanish population aged 12-18 years. *Int J Eat Disord* 2003; 34: 281-91.
- Rojo-Moreno L, Livianos-Aldana L, Conesa-Burguet L, Cava G. Dysfunctional Rearing in Community and Clinic Based Populations with Eating Problems: Prevalence and mediating Role of Psychiatric Morbidity. *Eur Eat Disorders Rev* 2006; 14: 32-42.
- Conesa M L. Análisis de la influencia del estrés en el desarrollo de los trastornos de la conducta alimentaria en población adolescente de la provincia de Valencia (tesis doctoral). Valencia: Universidad de Valencia, 2001.
- Imaz C. Trastornos del comportamiento alimentario en población estudiantil adolescente (tesis doctoral). Valladolid: Universidad de Valladolid, 2003.
- Imaz C, Ballesteros M, Higuera M, Conde V. Análisis asistencial en los trastornos del comportamiento alimentario en Valladolid.

- Actas Esp Psiquiatr 2008; 36: 75-81.
26. Conde VJM, Ballesteros MC, Blanco JA, Medina G, Imaz C. Algunos aspectos epidemiológicos, preventivos y asistenciales de los trastornos del comportamiento alimentario. *Psiquiatría.com Psiquiatría noticias* 2001; 3 (1).
 27. Beato-Fernández L, Rodríguez-Cano T, Belmonte-Llario A, Martínez-Delgado C. Risk factors for eating disorders in adolescents. A Spanish community-based longitudinal study. *Eur Child Adolesc Psychiatry* 2004; 13: 287-94.
 28. Beato-Fernández L, Rodríguez-Cano T. Gender differences regarding psychopathological, family and social characteristics in adolescent with anormal eating behavior. *Eat Behav* 2005; 6: 337-44.
 29. Rodríguez-Cano T, Beato-Fernández L. New contributions to the prevalence of eating disorders in Spanish adolescents: detección of false negatives. *Eur Psychiatr* 2005; 20: 173-8.
 30. Gandarillas A, Zorrilla B, Sepúlveda AR, Muñoz PE. Trastornos del comportamiento alimentario. Prevalencia de casos clínicos en mujeres adolescentes de la Comunidad de Madrid. *Documentos Técnicos de Salud Pública* 85. Madrid: Comunidad de Madrid, 2003.
 31. Gandarillas A, Febrel C, Galán I, León C, Zorrilla B, Bueno R. Population at risk for eating disorders in a Spanish region. *Eat Weight Disord* 2004; 9: 179-85.
 32. Peláez MA. Estudio epidemiológico de los trastornos de la conducta alimentaria en población escolarizada de la comunidad de Madrid (tesis doctoral). Madrid: Universidad Complutense de Madrid, 2002.
 33. Peláez MA, Labrador FJ, Raich RM. Prevalence of eating disorders among adolescents and young adult scholastic population in the region of Madrid (Spain). *J Psychosomatic Res* 2007; 62: 681-90.
 34. Arrufat FJ. Estudio de prevalencia de trastornos de la conducta alimentaria en la población adolescente de la comarca de Osona (tesis doctoral). Barcelona: Universidad de Barcelona, 2006.
 35. Muro P. Estudio de los Hábitos Alimentarios y de las Alteraciones de la Conducta Alimentaria en Adolescentes (tesis doctoral). Barcelona: Universidad de Barcelona, 2008.
 36. Muro-Sans P, Amador-Campos JA. Prevalence of eating disorders in a Spanish community adolescent sample. *Eating and Weight Disorders* 2007; 12; e1-e6.
 37. Sancho C, Arija MV, Asorey O, Canals J. Epidemiology of eating disorders: A two year follow up in an early adolescent school population. *Eur Child Adolesc Psychiatry* 2007; 14.
 38. Peláez MA, Labrador FJ, Raich RM. Epidemiología de los trastornos de la conducta alimentaria en España: revisión y estado de la cuestión. *C Med Psicossom* 2004; 71/72: 33-41.
 39. Peláez MA, Labrador FJ, Raich RM. Prevalencia de trastornos de la conducta alimentaria: consideraciones metodológicas. *Intern Jour Psych Psychol Ther* 2005; 5: 135-48.
 40. Ruiz-Lázaro PM. Bulimia y anorexia, Guía para familias. Zaragoza: Certeza, 2002.
 41. Ruiz-Lázaro PM. Trastornos alimentarios y género: una visión feminista. En: *El rostro de la Violencia*. Barcelona: Icaria Editorial, 2002. p. 155-91.
 42. Ruiz-Lázaro PM, Comet P. Consideraciones metodológicas acerca de la prevalencia de los Trastornos de Conducta Alimentaria. *Med Clin (Barc)* 2000; 115: 278.
 43. Zúñiga O, Padrón E. Traducción y propiedades psicométricas de la versión en español del Cuestionario Infantil para trastornos de la conducta alimentaria (CITCA). *Actas Esp Psiquiatr* 2009; 37: 326-9.
 44. Toro J. La epidemiología de los trastornos de la conducta alimentaria. *Med Clin (Bar)* 2000; 114: 543-4.
 45. Hoek HW, van Hoeken D. Review of the Prevalence and Incidence of Eating Disorders. *Int J Eat Disord* 2003; 34: 383-96.
 46. Martínez-González M, de Irala J. Los trastornos del comportamiento alimentario en España: ¿estamos preparados para hacerles frente desde la salud pública? *Gac Sanit* 2003; 17: 347-50.
 47. Ruiz-Lázaro PM. Guía Práctica, Prevención de los trastornos de la conducta alimentaria, Bulimia y Anorexia, 3ª ed, Zaragoza: Grupo Zarima-Prevención de la Unidad Mixta de Investigación del Hospital Clínico Universitario de Zaragoza, Consejo de la Juventud de Aragón, Gobierno de Aragón, Arba, 2010.