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Prevalence of Childhood Depression: Results of the First Study in Spain

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Abstract—Prevalence of depressive disorders was studied in 6432 children aged 8–11 years, selected by exhaustive random sampling in four Spanish cities and two rural areas. The number of non-participants was 38 (0.6%). Selection was by a two-stage procedure. At stage I, the Children's Depression Inventory was used to identify a sample for more intensive interviewing. At stage II, children were individually evaluated using a semi-structured interview, the Children's Depression Rating Scale-Revised (CDRS-R). CDRS-R and DSM-III diagnostic criteria were used to define caseness. 1.8% of children met the criteria for major depression, with a further 6.4% being diagnosed as having dysthymic disorder.

Keywords: Childhood depression, psychiatric epidemiology, psychopathological assessment, Spain, Depression prevalence, Spanish children

Introduction

This study provides prevalence data on childhood major depression and dysthymic disorder from the general population in Spain. Only a few epidemiological studies have been specifically concerned with children's depressive disorders and most of them looked at clinical populations. In the last decade, Puig-Antich (1980, 1982) and Kashani (1982) recommended general population studies. To the best of our knowledge, the present study is the first of this kind performed in Spain.

Our goals were to assess prevalence of childhood depression in Spain and to detect possible risk factors to allow for better planning of health services and improvement in children's mental health (Polaino-Lorente, 1988). Another purpose was to compare the results of our investigation with those previously obtained in other countries, using similar methods and the same operational diagnostic criteria (Kashani & Simmonds, 1979; Kashani *et al.*, 1983).

When this research was started, DSM-III (APA, 1980) was the most common approach to diagnosis (Kashani *et al.*, 1983; Anderson, Williams, McGee & Silva,

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1987) and DSM-III diagnostic criteria were adopted in this study. The field survey was conducted in Spain during a three-month period between January and March 1985.

Design

A two-stage sampling procedure was employed, for case-identification and for classification of subjects into three groups: (1) non-depressed children, (2) children with major depression, and (3) children with dysthymic disorder. This procedure is particularly useful in psychiatric epidemiology and has been extensively described (Rutter, Tizard & Whitmore, 1970, 1981; Cooper & Morgan, 1973; Rumeau-Rouquette, Breart & Padier, 1985; Verhulst, Berden & Sanders-Woustra, 1985).

During the first stage, the Children's Depression Inventory (CDI) (Kovacs, 1981) was used as a screening instrument. A child was considered a probable case if he or she scored at or above a cut-off of 19 points on the CDI. The Spanish translation of the CDI was previously tested in a pilot study. In this group a cut-off of 19 points corresponded to the 90th percentile. The cut-off of 19 on the CDI was suggested by Kovacs (1981) and it has been employed in a number of studies (Friedman & Butler, 1979; Orvaschel, Sholomkas & Weissman, 1980; Sacco & Graves, 1984; Stevenson & Romney, 1984; Strauss, Forehand, Frame & Smith, 1984; Blumberg & Izard, 1985; Lobovits & Handal, 1985; Mullins, Siegel & Hodges, 1985).

During the second stage, clinical assessments of the children were carried out. Each child selected as positive in the first stage was intensively interviewed. A comparison group randomly selected from those children who scored below the cut-off on the CDI was also interviewed.

The clinical evaluation of each child was based on the Children's Depression Rating Scale—Revised (CDRS-R) (Poznanski, Freeman & Mokros, 1985), which specifically evaluates childhood depression. The interviewers did not know the results of the CDI.

As well as the CDI and the CDRS-R, information was gathered from children themselves.

Additional data from other informants about the child's depressive state is also necessary (Poznanski, Cook & Carroll, 1979; Finch & Saylor, 1984; Herjanic, 1984; Hill, 1985; Achenbach, 1985; Weller & Weller, 1985; Domènech & Polaino-Lorente, 1990). In this study, information about a child's depression was obtained from teachers, parents and peers.

Sampling

The field survey was conducted in four Spanish cities (Madrid, Barcelona, Sevilla, Valencia) and two rural areas: La Coruña (Galicia) and Girona (Catalonia).

The subjects were school children from fourth-year grammar school classes of public and private schools. According to Graham (1979), surveys of school children offer the best and most economic hope of complete coverage. Ordinary schools do not contain children with very special needs who remained excluded from the population. However, in Spain, the number of special education classrooms is small because most mentally handicapped children have been integrated into ordinary schools.

School populations are well defined in the six areas studied. Updates and complete registers of public

and private classrooms, with the exact number of pupils in each one, are available in educational departments of every autonomous area.

In 1985, most of the children from four-year grammar school classes were born in 1976 and were aged between 9 and 10 years. Only a few were aged 8 or 11. The number of children to be evaluated was selected through a clustered random sample in every city and rural area previously mentioned. The sampling unit was the classroom.

To calculate the sample size in each one of the six areas studied, the childhood depression prevalence rate was estimated to be 3% and the precision required to determine the prevalence rate was 1%. The prevalence of childhood depression in the total population will be within 1% of the value found in the survey (95% confidence).

Using the Rumeau-Rouquette *et al.* (1985) formula:

$$n = z^2 \cdot p \cdot (1-p) / e^2,$$

where n is the sample size, z the coefficient which transforms raw scores into normalized scores, p the prevalence, and e the precision; it was found that

$$n = 1.96^2 \times 0.03 \times 0.97 / 0.01^2 = 1.118.$$

Since the classrooms have a mean of 30 school children, about 36 classrooms in each area were necessary to attain the sample size. Every class was randomly selected among the possible eligible classes in the six areas examined.

The total number of children evaluated in the first stage of the design was 6432. Only 38 children dropped out of the initial sample (0.6%).

The sample and distribution by areas, sex and age are shown in Table 1. This sample is representative of all the school children of the same age in Barcelona, Madrid, Valencia, Sevilla, Girona and La Coruña.

Table 1. The first stage sample

Area	Sex	Age (years)				Total
		8	9	10	11	
Madrid (35)	M	3	376	187	8	1030
	F	1	297	146	12	
Barcelona (36)	M	5	385	154	16	1120
	F	5	386	147	22	
Sevilla (32)	M	1	352	145	6	993
	F	0	339	148	2	
Valencia (36)	M	3	481	158	15	1285
	F	0	454	155	19	
Girona (37)	M	0	299	164	27	905
	F	0	280	116	19	
La Coruña (37)	M	1	348	200	13	1099
	F	1	355	163	18	
Total		20	4352	1883	177	6432

Total of children selected through a clustered random sample.

Distribution by sex and age (in brackets: number of classes by area).

M = Males.

F = Females.

In the second stage, the number of children individually assessed was 1211: 639 boys and 572 girls. This smaller sample was made up of probable cases: $N = 471$ (children with CDI equal to or above the cut-off point of 19); and of control group children: $N = 740$ (aleatory sample obtained from children with CDI below the cut-off point). The size of this second sample was calculated to be nearly twice the number of probable depressive cases. During this second stage 118 children (9.7%) were missing so only 1093 were evaluated: 582 boys and 511 girls.

Informants and Material

Multiple data sources were used. These included four different informants: children themselves, parents, peers and teachers.

The English instruments were translated to Spanish by a bilingual translator. The translation was checked on a pilot group of school children of the same age as the study sample. Another bilingual person blindly retranslated the Spanish translation back into English. Both translations were compared for equivalence.

Both children and informants were administered the CDI (Kovacs, 1983) and the CDRS-R (Poznanski, Freeman & Mokros, 1985).

The CDI is a commonly used self-report depression inventory for children. It has been standardized on children between 8 and 16 years and includes 27 items which refer to affective, cognitive, and behavioural symptoms of depression. For each item the child selects one of three sentences (0–2 point scale) which best describes him or her over the recent two weeks. Total scores range from 0 to 54. Higher scores reflect more severe depression. Internal consistency varies from .71 to .94 and validity has been extensively demonstrated (Saylor, Finch, Spirito & Bennett, 1984).

The CDRS-R is a semi-structured interview that specifically evaluates childhood depression. It contains 18 items in which children report their affective states while the behaviour of each child is observed by the interviewer. Poznanski *et al.* (1984) reported test–retest reliability between .86 and .81. Interrater reliability and criterion validity were found to be higher than .85.

The Achenbach Child Behaviour Checklist (CBCL) (Achenbach, 1978) was used to obtain parents' reports. It consists of 20 competence items and 118 items which describe behavioural/emotional problems (Achenbach, Verhulst, Baron & Akkerhuis, 1987). The 118 items describe a wide number of problems that most parents can report with minimal inference. Each one has three possible answers. The parent scores by circling 0 if the item is not true, 1 if it is sometimes true, and 2 if it is frequently true.

An appropriate teacher instrument for childhood depression did not exist to our knowledge. DSST or Depressive Symptomatology Scale for the Teacher (Domènech, Monreal & Ezpeleta, 1985) was developed specifically for this epidemiological study, to obtain data on depressive symptomatology using teachers as informants. The DSST has 16 items with three response alternatives. It demonstrated a high internal consistency ($= .88$) and criterion validity ($r = .41$ with CDI; $r = .44$ with CDRS-R) (Polaino-Lorente & Domènech, 1988; Ezpeleta & García-Villamizar, 1990).

The Peer Nomination Inventory of Depression or PNID (Lefkowitz & Tesiny, 1981) is probably the only instrument for the evaluation of childhood depression that uses other children as informants. Each child is asked to judge which classmates exhibit the behaviour indicated by each of the 23 items of the instrument. Its characteristics were previously studied in a Spanish sample (Ezpeleta, Polaino-Lorente, Domènech & Domènech, 1990).

All the material was previously tested on a pilot group which was not included in the sample.

Definition of Caseness

Until another "gold standard" is determined, the use of clinical criteria seems appropriate in defining deviance, and has the general appeal of having validity in terms of defining what clinicians consider disordered (Links, 1983). Information for the diagnosis was based on the CDRS-R which provided the necessary information to apply the DSM-III criteria for major depression and dysthymic disorder. In fact, we prefer to talk about "Dysthymic Disorder Symptomatology" instead of Dysthymic Disorder, because the duration of one year for dysthymic disorder was not possible to achieve.

All the items of the CDRS-R which reflect DSM-III criteria for major depression and dysthymic disorder were included in the operational definition of caseness. To include an item of CDRS-R in the pathological category, it had to score 4 or more, as agreed by two child psychiatrists and two clinical psychologists. This definition, in which the items of CDRS-R were matched to DSM-III criteria, was called "diagnostic 1".

Following these operational definitions, children were assigned to one of the following categories: non-depressed (ND), dysthymic disorder symptomatology (DDS) and major depression (MD) (see Appendix).

Results, Prevalence of Depressive Disorders

Estimates based on child's own report

The first prevalence estimates reported were based on the information from the children, obtained through the CDI and the CDRS-R.

During the first stage, 471 children were found to be probable depressives, on the basis that they scored 19 points or more on the CDI, the cut-off used by Kovacs to indicate probable caseness.

The prevalence results which are based on the definition of caseness obtained after the second phase are 1.8% for major depressive disorder and 6.4% for dysthymic disorder symptomatology. The point prevalence of childhood depressive disorder (major depression plus dysthymic disorder) from the general population was estimated to be 8.2% at the age of 9–10 years.

Table 2 shows point prevalences of major depression and dysthymic disorder symptomatology in each area. There were very small differences between the six areas evaluated in the category of dysthymic disorder.

Table 2. Point prevalence of depression in each area (95% confidence intervals in brackets)

	Major depression	Dysthymic disorder
Madrid	2.1% (1.3–3.2%)	4.8% (3.6–6.4%)
Barcelona	1.9% (1.2–2.9%)	7.0% (5.5–8.7%)
Sevilla	3.5% (2.5–4.9%)	6.9% (5.4–8.8%)
Valencia	0.9% (0.4–1.6%)	4.7% (3.8–5.6%)
Girona	1.1% (0.5–2.0%)	6.4% (5.0–8.4%)
La Coruña	2.7% (1.8–3.9%)	7.6% (6.0–9.5%)
Total	1.8% (1.5–2.1%)	6.4% (5.8–7.1%)

The sex distribution in the groups was the following: 14.1% of the boys and 18.4% of the girls were found to be depressed. This difference in depression prevalence (major depression + dysthymic disorder) approached significance. ($\chi^2 = 3.73$, $p = .06$).

The sex distribution in each subtype was the following: 4.3% of the boys and 3.9% of the girls met the criteria for major depression and 9.8% of the boys and 14.5% of the girls met the criteria for dysthymic disorder. The difference between boys and girls is higher in this second subtype of depression.

Estimates based on additional information

The additional sources of information, parents, teachers and peers were analyzed in combination with the definition of caseness above described.

The corroboration of diagnostic 1 with the results of the CBC (information from the parents) or with those of the ESDM (information from the teachers) was called "diagnostic 2".

Using "diagnostic 2" the rates of prevalence were lower: 0.6% (95% confidence interval, 0.4–0.8%) for major depression and 3.0% (2.6–3.4) for dysthymic disorder.

Discussion

The present study is one of the few epidemiological studies of prepubertal depressive disorders in non-patient samples using operational diagnostic criteria and probably the first to be conducted in Spain. In a recent review, only four of those studies were reported in children (Fleming & Offord, 1990).

Prevalence

The estimated prevalence of major depressive disorder (1.8%) is similar to that found in New Zealand by Kashani *et al.* (1983) with a sample of 9-year-old children. The age range of the Spanish population was the same as that of Kashani's sample which also used DSM-III criteria for depression.

The rate for dysthymic disorder (6.4%), is higher than the rate of Kashani's sample (2.5%). This difference may be due to the different duration of dysthymic disorder used in the two studies. In another study, different criteria than those of DSM-III dysthymic disorder for the diagnostic for minor depression were also used (Anderson *et al.*, 1987) and different results were obtained.

The values obtained by Anderson *et al.* (1987) are lower than those found by Kashani, as well as the results of this study (major depression 0.5%). This rate is similar to "diagnostic 2" of the present investigation (0.6%). It is important to remark that Anderson *et al.* (1987) used diagnostic criteria combining symptoms from different sources as we did in "diagnostic 2".

Our results agree with the finding reported by Kazdin (1989) who demonstrated that depending on selection criteria, different conclusions about the nature of depression in children may be obtained. Therefore, the different ways of defining deviance will result in different reported prevalence (Offord, 1985). We also agree with Fleming *et al.* (1989) who reported that it would be premature to draw firm conclusions about prevalence, beyond stating that major depression appears to occur in less than 3% of children. This is true also for Spanish samples.

Depression and sex

Kashani *et al.* (1983) did not find a significant association between sex and depression at 9 years. Depressive disorders were also found to be similar in girls and in boys

by Velez, Johnson and Cohen (1989) and Fleming, Offord and Boyle (1989). In contrast, Anderson *et al.* (1987) and Costello *et al.* (1988) found more boys depressed than girls. On the other hand, studies in adolescence indicated higher rates of depression in females (Fleming *et al.*, 1989; Garrison, Jackson, Marsteller, McKeown & Addy, 1990; Domènech, Canals, Fernández & Marti, 1992). This pattern is in agreement with findings in adults (Klerman & Weissman, 1988), while in prepubertal children findings remain inconsistent.

In the present study, no significant differences were found in children of 9–10 years when we consider depression *in toto*. These results are similar to those reported by Kashani for the same ages. However differences appeared when different subtypes of depression were investigated. These data suggest one should include different subtypes of depression in the study of gender as a risk factor for childhood depression. To date, few studies have included all these different diagnoses.

Limitations and successes

At the beginning of the field survey, psychometric properties of the translations of English screening instruments needed to be studied in Spanish samples. Spanish instruments were not available. Moreover, the sensitivity of the cut-off point of 19 of the CDI, commonly used by Kovacs was low in a pilot Spanish sample. In a more recent study we used a cut-off point of 17 (Canals, Marti-Henneberg, Fernández-Ballart & Domènech, unpublished data). Ideally, in accordance with Kashani *et al.* (1983) future epidemiologic studies of childhood depression should interview all sample subjects to determine exact rather than estimated prevalence rates. However, at the present this ideal is far from being attained in Spain.

A second limitation regards the definition of caseness which involved the child only. Nevertheless children can be reliable reporters and they are the best informants for depression (Cytrin, McKnew & Bunney, 1980) as well as other kinds of internalizing disorders. This fact is reflected in the predominance of child-identified cases when multiple sources are used. We think that there is a lack of sufficient methodological basis for disorders to be identified using multiple sources when the concordance between sources is low and this is the case of childhood depressive disorders (Kazdin, French, Unis & Esvelt-Dawson, 1983; Edelbrock, Costello, Dulcan, Calabro & Kala, 1986). Moreover, combining information from different informants to measure childhood disorder may be inadvisable. If child features associated with disorders vary with the informants, there is a risk of attenuating or masking these associations when informant assessments are combined (Offord, Boyle & Racine, 1989).

A third limitation is related to the sample. Since the response rate was more than 99%, non-participants were not a source of bias. However, we evaluated only six areas: four big cities (Madrid, Barcelona, Valencia, Sevilla) and two rural areas (Girona, La Coruña). Moreover, the population assessed is a school one. Children with poor attendance were evaluated, but school dropouts were excluded. Differences between the six areas in the category of major depression were found. However, the results of major depression prevalence were similar in Madrid and Barcelona and the differences between areas in the category of dysthymic disorder symptomatology were very small.

Conclusion

Major depression prevalence data in Madrid and Barcelona are not so different to those found in the four studies reviewed by Fleming and Offord (1990). Like the authors of the four previous studies: Kashani and Simmonds (1979); Kashani *et al.* (1983); Anderson *et al.* (1987); Costello *et al.* (1988), we have used non-patient samples, children of similar age (between 7 and 12) and the same operational criteria for diagnostic.

We conclude that the childhood depression prevalence in Spain is probably the same as the childhood depression prevalence in USA and New Zealand.

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Appendix. Operational Definitions

1. Operational criteria for major depression caseness definition

A child is considered to have a major depression if he or she fulfills the following criteria:

A. *Dysphoric mood*. A score of 4 or above on any of the four dysphoric mood items of the CDRS-R (CDRS-R 11: depressive feelings; CDRS-R 14: crying; CDRS-R 15: depressive affect; CDRS-R 18: variable mood).

Or a score equal to 4 or above on the item CDRS-R 2: loss of interest or pleasure.

B. *At least four of the following symptoms*. Score of 4 or above on the items: (1) CDRS-R 5: appetite changes; (2) CDRS-R 4: insomnia or hypersomnia; (3) CDRS-R 17: psychomotor agitation or retardation; (4) CDRS-R 2: loss of pleasure; (5) CDRS-R 6: fatigue; (6) CDRS-R 9: feelings of guilt; (7) CDRS-R 1: loss of concentration; (8) CDRS-R 12: morbid ideation; (9) CDRS-R 13: suicidal ideation.

2. Operational criteria for Dysthymic Disorder Symptomatology caseness definition

A child is considered to have dysthymic disorder symptomatology if he or she fulfills the following criteria:

A. *Dysphoric mood*. A score of 4 or above on any of the four dysphoric mood items of the CDRS-R.

Or a score of 4 or above on the item CDRS-R 2: loss of interest or pleasure.

B. *At least three of the following symptoms*.

B1: Insomnia or hypersomnia: score of 4 or above on the CDRS-R item 6.

B2: Loss of energy or chronic fatigue: score of 4 or above on the CDRS-R item 6.

B3: Feelings of incompetence, loss of self-esteem, complaints of oneself or rejection: score of 4 or above on the CDRS-R item 10.

B4: Diminished achievement in the school or at home: score of 4 or above on the CDRS-R item 1.

B5: Poor concentration or attention span or diminished clear mind: score of 4 or above on the CDRS-R item 1.

- B6: Social withdrawal: score of 4 or above on the CDRS-R item 3.
- B7: Loss of interest or pleasure: score of 4 or above on the CDRS-R item 2.
- B8: Irritability or fits of anger: score of 4 or above on the CDRS-R item 8.
- B9: Inability to respond to reinforcement: no items in the CDRS-R.
- B10: Diminished activity, speech, slowness, or restlessness: score of 4 or above on the CDRS-R item 16.
- B11: Hopelessness, rumination: no item in the CDRS-R.
- B12: Crying or whining: score of 4 or above on the CDRS-R item 14.
- B13: Morbid or suicidal ideation: score of 4 or above on either of the two CDRS-R items 12 and 1.