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Prevalence of mental disorders among children in Valencia, Spain

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A 2-stage survey was carried out to establish the point-prevalence of mental disorders and help-seeking behaviour in children aged 8, 11 and 15 living in the city of Valencia. Global prevalence rates, rates by age and rates by sex, as well as rates of specific diagnosis according to DSM-III-R criteria are described. Help-seeking behaviour was found to be related to an interaction between internalizing and externalizing symptoms and sex.

Key words: epidemiology; childhood; mental disorder

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Since the first studies carried out in the 1950s in the United States, data on the prevalence of mental disorders among children all over the world have been accumulating. Based on data published before 1980, Gould (1) estimated the prevalence rate of mental disorders in the United States at a maximum of 11.8% and Brandenburg (2), who reviewed all works published after 1980, estimated that the prevalence would be between 14 and 20%.

Despite the fact that some of the most important prevalence studies on childhood mental disorders in Europe were conducted more than 25 years ago (3), there is no information available on the prevalence of such disorders in Spain. The preservation of family life in Spain as compared with other western countries may be a relevant variable in the study of prevalence and/or the parent's help-seeking behaviour and therefore deserves special attention.

The aim of this study was to establish the point-prevalence of mental disorders and pattern of morbidity as well as use of professional services in the city of Valencia among 8-, 11- and 15-year-old children. The study was carried out according to a 2-stage design. In the first stage, the Child Behaviour Checklist (4) was employed as a screening instrument and in the second the Schedule for Affective Disorders and Schizophrenia (K-SADS) (5) and the Global Assessment Functioning Scale (6). In the second stage parents were also given a questionnaire enquiring about the presence of chronic somatic diseases and impairments in their children. Finally, a brief interview on the use of professional services was conducted.

Material and methods

Valencia is situated on the east coast of Spain. With 738,575 inhabitants, it is the country's third largest city. At the time of the study, approximately 60% of the population was employed in the service sector and 35% worked in industry and less than 5% in agriculture. The unemployment rate stood at approximately 18% at the time of the survey. Valencia has the seventh highest level of GNP among Spanish regions.

The first stage

The sample frame for this study was the municipal census, and the sampling unit was the individual child included in 1 of 3 age groups.

A sample of 1200 children was selected by simple random sampling, with a fixed number of 400 per age group (8, 11 and 15 years old). Another random sample was taken with identical characteristics to provide replacements as necessary.

In order to identify probable psychiatric cases, the Spanish version of the Child Behavior Checklist (CBCL) (7), whose psychometric characteristics have been described by Puche (7), was used. Puche found that a cut-off point of 31 successfully discriminated between clinical and nonclinical cases, with a sensitivity of 0.88, a specificity of 0.88 and a misclassification rate of 13%. The original version of the questionnaire was designed to be self-administered by the parents, but Puche found in a sample of Spanish mothers that test-retest reliability increased

considerably if the questionnaire was administered to the parents by a third person. Because of this, the CBCL was administered to the parents in the course of an interview. The interviews were carried out by final-year students from the Valencia University School of Social Work who had previously been trained in handling the CBCL. Although the plan was to interview both parents at home, in the majority of cases it was only possible to obtain information from the mothers.

Children who refused to collaborate or could not be located were replaced. Replacements were made maintaining the same characteristics of age, sex and socioeconomic level of area of residence.

The second stage

Once the first stage was completed, a reduced sample of children was selected for the diagnostic exploration corresponding to the second stage. This subsample consisted of a percentage of children chosen randomly from score intervals in the CBCL, percentages that were larger the higher the score: approximately 10% of those who scored lower than 20; 25% of those who scored between 21 and 30; and 90% of those who scored over 30.

As in the first stage of the study, the children who could not be interviewed were replaced by others with the same characteristics of age, sex and socioeconomic level in the area of residence, adding to this stage the requirement that they had a similar score on the CBCL ($\pm$ 5 points).

For case identification and diagnosis according to DSM-III-R criteria, the semistructured K-SADS interview (5) was used, adapted to Spanish (8). The interviewers taking part in the second stage of the study were 4 trained pediatric psychiatrists. They were trained in the usage of the K-SADS interview, until an agreement index over 90% was reached in a sample of 36 children. In order to detect and exclude from the final prevalence estimate children with lower than normal intellectual performance levels, the Progressive Matrices was used (9). The children placed below the 25th percentile were excluded if, at the same time, they showed clinical or social signs of general developmental disturbance.

The interview almost always took place in the child's home, although on occasions it was conducted in hospital. Generally, the interview was conducted first with the child and subsequently with the mother, alone with the interviewer on both occasions.

The length of the interviews ranged from 40–50 min in straightforward cases to 105 min in the most difficult cases. In almost all the interviews, both the child and the parents were seen; however, in a small number of 15-year-olds, the interview took place with them alone at their request.

A measure of impairment was obtained by scoring 5 areas of daily life (family life, social relationships at school, social relationships outside school, leisure activities and school performance) on a 4-point severity scale (none, slight, moderate and severe).

Following the psychiatric examination, the presence of somatic diseases and impairments as perceived by the parents was explored by means of a checklist. Parents were also asked to measure the degree of disability and the degree of distress associated to each of the identified somatic complaints, on a 3-point severity scale (none, moderate or severe).

Finally, help-seeking behaviour was investigated. Consultation with private or public professional services for mental reasons was registered, as well as consultation dates, and the type and duration of treatment.

Mental disorder criteria

Mental disorders were considered to be present for the children who received at least one diagnosis on Axis 1 according to DSM-III-R criteria; their degree of severity was measured by the Global Assessment of Functioning score (6): 100-71: minimally impaired; 70-61: mildly impaired; 60-51: moderately impaired and under 51, severely impaired.

Results

Of the original sample of 1200 children, 348 could not be interviewed: 85 (7%) refused to collaborate, 70 (6%) were not located and 193 (17%) corresponded to census errors. Of the 348 not interviewed it was possible to provide 275 replacements equivalent in sex, age and socioeconomic level of area of residence, who were interviewed, which left 73 cases without possibility of replacement, and due to which the final sample interviewed was reduced from 1200 to 1127.

During the second stage of the study there were 23 (7%) refusals, of which it was possible to replace 18 with children of the same age, sex, socioeconomic

Table 1. Children interviewed in the first and in the second stage, by age and sex

	First stage			Second stage		
	Boys	Girls	Total	Boys	Girls	Total
8 years	164	162	326	64	56	120
11 years	188	197	385	48	45	93
15 years	213	203	416	53	54	107
Total	565	562	1127	165	155	320

Table 2. Children interviewed in the first and in the second stage, by CBCL score intervals and sex

	First stage			Second stage		
	Boys	Girls	Total %	Boys	Girls	Total %
0–20	320	329	649 (57.6)	32	34	66 (10.2)
21–30	127	136	263 (23.3)	30	36	66 (25.1)
>30	118	97	215 (19.1)	103	85	188 (87.4)
Total	565	562	1127 (100)	165	155	320 (28.4)

Table 3. Weighted prevalence rates (%) and standard errors, adjusted by age and sex, according to GAF scores

	GAF 100-0		GAF 70-0		GAF 60-0	
	%	SE	%	SE	%	SE
8 years	27.5	4.7	18.8	3.9	3.6	1.1
11 years	18.8	4.5	15.0	4.2	4.1	2.0
15 years	19.1	4.5	13.6	3.8	5.8	2.7
Boys	24.4	4.0	17.9	3.5	4.3	1.5
Girls	19.2	3.5	13.6	2.9	4.4	1.8
Global	21.7	2.7	15.7	2.3	4.4	1.2

level of area of residence and score in the CBCL questionnaire, as the refusals. In Table 1 the samples finally interviewed in the first and second stages are shown.

Table 2 shows the distribution of children in the first and second stages of the study in accordance with their scores in the CBCL. In the first stage of the study, 19% of the children obtained a score of over 30 points in the CBCL and 5% exceeded a score of 40.

Once the second stage was concluded, 11 children were found to have scored less than 25% in the Raven Matrices, along with signs of general developmental disturbance and so were not included in the final analysis. Three of them fulfilled mental disorder criteria, with the following diagnoses: enuresis, overanxious disorder and oppositional disorder.

Prevalence rates

Of 320 children examined in the second stage, 114 met case definition criteria. The global weighted point-prevalence rate was 21.7% ± 2.6, but if children with minimal and mild disorders were excluded, the rate would come down to 4.4% ± 1.2 (Table 3).

Boys presented higher rates than girls in all 3 levels of impairment, the ratio of boys/girls being 1.2, 1.2 and 1.7; however, marked differences emerged when these rates were broken down into age groups: at age 8, boys presented considerably higher rates than girls across the 3 levels of impairment, whereas the inverse pattern was seen in 15-year-olds (Table 4).

Table 5 shows the estimated prevalence rates of specific diagnosis adjusted for age. Rates of externalizing disorders (disturbed behaviour, attention deficit, elimination and tic disorders) tend to diminish with age, whereas rates of internalizing disorders (overanxiety, mood, sleep and phobic disorders) tend to increase. Boys were prevalent over girls in all diagnoses for ages 8 and 11, except for simple phobias and separation anxiety, which were commoner in girls. On the other hand, girls' rates were higher at age 15 in all disorders except tics and overanxious disorder. The size of the sample does not allow for the calculation of rates of diagnosis specific to age and sex.

Sixty-eight percent of the children had received one diagnosis, 23% 2 diagnoses and the rest 3 or more diagnoses. The number of diagnoses per child was 1.7 at 8, 1.6 at 11 and 1.8 at 15. The most common diagnostic association at 8 was attention deficit-hyperactivity disorder (ADHD) with tic or elimination disorder, whereas in older children the association of ADHD with oppositional disorder was commoner at 11 and of oppositional disorder and overanxiety at 15.

Help-seeking

Forty-nine children classified as cases (43%) had sought professional help at least once in their lives for mental reasons, other than learning disorders, but only 18 (16%) were currently in contact, 14 (78%) with the national health service and 4 with private practitioners. Five children were visiting their paediatrician, 5 were visiting a psychologist and 8 a psychiatrist. On the other hand, 3 children who were

Table 4. Weighted prevalence rates (%) and standard errors, adjusted by age, sex and GAF scores

	8-year-old				11-year-old				15-year-old			
	Boys		Girls		Boys		Girls		Boys		Girls	
	%	(SE)	%	(SE)	%	(SE)	%	(SE)	%	(SE)	%	(SE)
GAF<100	34.1	(7.1)	18.8	(4.6)	19.2	(6.7)	17.9	(6.1)	16.9	(5.6)	21.1	(6.9)
GAF<70	25.3	(6.4)	10.4	(2.4)	16.2	(6.6)	14.1	(5.4)	10.8	(4.2)	16.3	(6.2)
GAF<60	4.7	(1.7)	2.6	(1.3)	7.2	(4.8)	2.0	(1.1)	2.3	(1.1)	9.1	(5.1)

Table 5. Weighted prevalence rates and standard errors of Axis I DSM-III-R disorders adjusted by age

	8 years		11 years		15 years	
	%	(SE)	%	(SE)	%	(SE)
Elimination	11.1	(3.4)	2.2	(1.9)	–	–
Tic	6.4	(2.9)	0.6	(0.4)	4.9	(2.7)
Disturbed behaviour	1.7	(0.7)	4.1	(2.0)	6.9	(2.8)
ADHD	14.4	(3.5)	5.3	(2.1)	3.0	(1.9)
Obsessive compulsive	0.3	(0.3)	0.3	(0.3)	–	–
Sleep	0.7	(0.5)	4.4	(2.6)	4.9	(2.6)
Phobic	0.7	(0.5)	2.5	(1.9)	1.9	(1.8)
Separation anxiety	1.7	(0.7)	1.2	(0.6)	–	–
Excessive anxiety	1.7	(0.7)	4.1	(2.0)	6.7	(2.8)
Depressive	0.7	(0.5)	0.9	(0.5)	2.5	(1.9)

Table 6. Multiple logistic regression model. Dependent variable: help-seeking (yes=1; no=2). Independent variables: sex (boy=1; girl=2) and IntCBCL (internalizing factor score of the CBCL). – 2 times LLR=12.19; df=2; $P<0.01$

	Estimate	SE	Estimate/SE
Constant	−1.16	0.35	−3.35
Sex	−1.87	0.77	−2.44
Int CBCL×Sex	0.69	0.24	2.87

not considered to be clinical cases but who were having serious relationship problems were receiving treatment. Children who were seen by psychiatrists had significantly higher GAF scores than children who were seen by either the psychologists or paediatricians ($F=5.72$; $P=0.014$).

The majority of children who had been in touch with professional services in the past (25/31) and half of those who were receiving help at present (9/9) had contacted less than 5 times altogether. Fifty children were classified by their parents as suffering from a chronic somatic ailment, but only 35 were thought to be moderately to severely disabled in their daily lives and 10 were thought to be significantly distressed. The most frequent complaints were: orthopaedic (8 cases), specific allergies (8 cases), visual (7), vascular headache (5 cases), epilepsy (3 cases) and diabetes (3 cases). No significant association was found between somatic complaints and mental status, nor between somatic complaints and help-seeking behaviour for mental reasons.

To investigate the reasons why the majority of children classified as clinical cases had not sought professional help, a multiple logistic regression model was run, with age, sex, GAF scores, CBCL scores (factor scores on internalizing and externalizing behaviours) and impairment scores (family relationships, social relationships outside school, social relationships at school and leisure activities) as independent variables and consultation status as the dependent variable. The best fit is shown in Table 6. Being a boy is significantly associated with consultation. There is also a significant interaction of CBCL scores with sex: children who consult present higher scores in internalizing behaviour, particularly boys. Externalizing scores are associated with consultation in girls, whereas in boys they play against the probability of consultation (Table 7).

Once the investigation was finished, the parents of children with a GAF score under 51 were contacted and offered psychiatric treatment. Only 1 of 19 accepted.

Discussion

Brandenburg (2) reviewed 8 surveys carried out in the last decade, reporting a range of prevalence rates from 14% to 20%. Compared with these, the rates presented here are very low. The discrepancy is unlikely to be caused by methodological differences since in more than half of the surveys reviewed by Brandenburg, the diagnostic instruments and case definition criteria are the same or very similar to those used in this study. One the other hand, the differences are too large to be accounted for by the differing sample sizes and standard errors.

The point prevalence reported in this study is bound to be lower than the period prevalence reported in some studies, but this is not enough to justify such a large difference in rates, since the most prevalent disorders described here (ADHD, elimination and disturbed behaviour disorder) tend to last for several years, and therefore the probabilities to be picked up in surveys of period or point prevalence are very similar.

Perhaps the difference in rates can be explained by a different interpretation of the degrees of impairment adopted in this survey and this in turn may be linked to cultural differences between countries: an attitude of greater sensitivity towards children's suf-

Table 7. Internalizing and externalizing CBCL mean scores, according to help-seeking behaviour and sex

	Boys			Girls			Global		
Help-seeking	yes	no	*P*	yes	no	*P*	yes	no	*P*
Int CBCL	2.7 (1.9)	0.6 (1.5)	0.001	1.3 (2.4)	0.9 (1.6)	0.6	1.9 (2.2)	0.7 (1.5)	0.04
Ext CBCL	0.6 (1.3)	1.3 (1.0)	0.1	1.7 (1.2)	1.2 (1.4)	0.3	1.2 (1.3)	1.2 (1.2)	0.9

fering in one country or greater tolerance towards certain difficult behaviours in the other.

On the other hand, some countries may have a more developed system of psychiatric services for children than Spain, and it seems logical that the more developed the services, the more likely it is that high rates of cases needing psychiatric treatment are to be found. Nevertheless, once again it should be stressed that we are trying to explain a 4-fold difference in rates and this difference is large enough to consider that the possibility of there being real differences in the prevalence of severe disorders between Spain and the rest of the surveyed countries cannot be discounted. This low rate is in accordance with other low rates found for various psychosocial problems in Valencia, such as suicides (10), attempted suicides (11) and treated prevalence rates of adult mental disorders (12) registered in this city. The consistency of these findings backs up the hypothesis of a true lower rate of psychosocial problems in Valencia, including the prevalence rates of child psychiatric patients, which may deserve further research efforts.

Most of the estimations of rates adjusted to age, sex and GAF scores have very large standard errors, but nevertheless a few general comments can be made with confidence. A large part of the global prevalence rate can be accounted for by disorders in 8 year-old boys. These are of mild severity, mostly elimination and ADHD disorders, which tend to diminish with increasing age. It could be that children at this age respond to stress with visible symptoms, such as enuresis, tics or hyperactivity, whereas older children more often respond with mood and anxiety symptoms that may pass unnoticed by the parents and thus go unreported at interviews.

In general, boys' rates tend to diminish with age, just the opposite of girls', so that by age 15 girls have outnumbered boys in all degrees of impairment. The distribution of rates by age reported previously covers all possibilities: Verhulst (13) found a higher prevalence rate for 8 year olds, while Offord (14) found similar rates for all ages, and Laucht (15) reported rates in 13 year-olds higher than rates in 8-year-olds.

The sample studied is too small to estimate the prevalence rates for specific diagnoses with any degree of confidence and this is reflected in the large standard errors reported. Furthermore, using a single screening test may not be the best way to obtain a fair representation of all diagnostic disorders in the second stage. Therefore, the rates quoted here should be interpreted as a description of the morbidity pattern rather than taking them as reliable rates of specific diagnoses.

With regard to this pattern, disruptive behavior disorder is the most frequent diagnosis for all ages, followed by anxiety disorders, and this is in keeping with the findings of other published reports (13, 16–18). However, significant rates of elimination, tic and sleep disorders have never been reported in previous studies. This may result from either having considered these disorders secondary to other diagnoses and therefore not worthy of comment or, alternatively, these disorders may have been found to have no repercussion in the life of the child and for this reason have been disregarded as a constituent of mental disorder. This is not the case in the present survey. In the majority of presentations (82%) the disorder present was related to another disorder, generally the most frequent one in the corresponding age and sex group. In 18% of the presentations the disorder was monosymptomatic but of sufficient severity to warrant specialized treatment according to the interviewing psychiatrists. It could also be that these disorders run a more prolonged course than mood disorders and so are more likely to be detected in a point-prevalence study like this one.

Separation anxiety, ADDH and elimination disorders tend to diminish with increasing age, whereas oppositional, overanxious and mood disorders tend to increase. This is in keeping with a maturational point of view of child psychopathology.

The most frequent diagnostic association found was between ADHD and oppositional disorder, which is in agreement with previous reports (16, 18, 19). This association is claimed to be especially frequent in boys, but in this survey the combined frequency was similar in both sexes. Kashani (19), Anderson (18) and others have reported a relationship between mood and disruptive disorders which has not been confirmed in this study, perhaps due to the very few cases of depression identified.

In spite of a fairly well developed public network of child psychiatric assistance, only 16% of children classified as having a mental disorder were under treatment, and then half of them had made less than 5 visits altogether. These facts are all the more disturbing if we consider that almost all parents of severely ill children who were offered help did not accept it.

Nevertheless, reported service utilization rates are generally low. Thus, Anderson (18) found that 29% of 11-year-old children suffering from a confirmed mental disorder were referred to specialized services, and in Rutter's Isle of Wight study only 1 in 6 children found to be in need of treatment were actually receiving it. Contrary to expectations, in this study there was an absence of unjustified help-seeking behaviour; this is in contrast to previous surveys where a substantial percentage of normal children were reported to have contacted specialized services not because of their mental state but because of their mother's (21).

In this survey, children who sought help and who were found to be normal on Axis I suffered from Code V problems, which explained their being under treatment. On the other hand, a very high percentage of mentally normal children were receiving psychological help at their school because of Axis II learning disorders, but these children have not been considered to be in treatment. Perhaps parental anxieties here find indirect relief through the school psychological services, and this may explain the lack of unjustified help-seeking behaviour found in this survey.

A significant association was found between being a boy and having consulted within the last 6 months, which is in keeping with previous findings. However, the interaction between sex and internalizing CBCL score has not been reported before. One possible explanation is that externalizing behaviour (hyperactivity, aggressiveness and impulsiveness) is better tolerated in boys than in girls because it is thought to be more compatible with the male role, whereas the opposite applies to internalizing behaviour. This may well be a sexist culturally dependent pattern of help-seeking behaviour.

Approximately 10% of children from the second-stage sample were reported to suffer from a somatic problem of moderate to severe degree. It is interesting to note the lack of association between distress and/or impairment caused by chronic somatic complaints on the one hand and mental status and help-seeking behaviour on the other. This is at variance with the findings reported in adult psychiatry, where mental and somatic complaints and help-seeking behaviour go together, and it may be explained by the less distressing impact that somatic disease may have on children' life.

Unfortunately, the analysis of the available data did not help to reveal why some parents of severely ill children did not seek

consultation. It is likely that other factors related to parents' attitudes that were not taped in this investigation play an important role in parents' help-seeking behaviour (22).

One of the aims of prevalence surveys is to identify and treat people found to be suffering from a disorder. However, this is the first time that, in a reported psychiatric survey of children, treatment is offered to the parents of children with severe disorders. The negative parental response casts a doubt on the utility of prevalence surveys for this aim; however, whether this can be generalized to other cultures is open to question.

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