

# Prevalence and Correlates of Mental Disorders in a School-Survey Sample

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## Abstract:

**Background:** Most of the adult mental disorders have their origins early in life. As the epidemiology of childhood psychiatric disorder in Italy has not been extensively investigated, we have evaluated the prevalence of mental disorders and their association with socio-familial variables in a representative sample of children aged 6 to 11.

**Method:** The study was conducted on a school- sample of 1028 children, aged 6 to 11, attending 12 primary schools in Florence (Italy). The diagnoses were made according to DSM IV diagnostic criteria, integrated by the description of each symptom, using specially trained teachers as lay-interviewers. Odds ratios with 95% C.I. chi squares and a stepwise binary logistic analysis have been performed.

**Results:** Nine hundred ninety nine children (506 males; 493 females) were studied. Of them, 10.5% received a psychiatric diagnosis, with a higher prevalence in males (66.7% vs.33.3,  $p < 0.01$ ). The most prevalent groups of mental disorders were the behavioural/impulse control (7.2%) and anxiety (6.4%) disorders. Attention Deficit with Hyperactivity Disorder was the most represented diagnosis (5.6% of the children). All the other mental disorders were relatively rare, with only separation anxiety and overanxious disorder exceeding 1% prevalence.

Male gender, organic disease, having mother divorced, not present or dead, attending school full-time, cohabitation in the family were associated with an increased risk for any childhood mental disorder.

**Conclusions:** About one in ten children aged 6-11 suffers from a mental disorder. Male gender, loss of mother and lower socio-economic status are associated with mental disorders in children. Further long-term prospective studies are needed, in order to clarify the epidemiological and psychopathological relationships between childhood and adult mental disorders.

**Keywords:** Childhood, epidemiology, mental disorder, risk factor.

## BACKGROUND

Most of the mental disorders of adulthood have their origins early in life.

Although the disorders typical of childhood tend to recur during adulthood and are associated with substantial difficulties in later life [1], the epidemiology of childhood psychiatric disorder has not been extensively investigated to date [2-6].

Epidemiological studies on children psychopathology show different methodological difficulties. Parents, teachers, and paediatricians can be used as informant [7], but different informants will often disagree [2, 8-10], as parents are too involved and poorly objective [11], while teachers use different parameters [12-15], basically making comparisons with children of similar ages [16-17].

Accordingly, psychiatric disorders in children aged between 1 and 9 have been reported with prevalence rates ranging from 0.1% to 26.4% [5, 18], with remarkable differences

between countries [19], independently of the different regions of the world, socio-economic development, and other structural correlates [5].

Most of the childhood-onset disorders show a higher rates of males than females, with a median sex ratio (boys-girls) of 1.6:1 [6, 18, 20-23], and such differences are mainly due to the higher frequency of behavioral disorders in boys [18, 23].

Considering the prevalence rates, Attention Deficit with Hyperactivity Disorder (ADHD) is one of the most prevalent disorder observed in childhood and adolescence, with little differences between countries [24-26]. Anxiety disorders are also common [27-29], with rates of 0.1%-13.3% in boys and 0.4%-28.6% in girls [28]. The most prevalent anxiety disorders are overanxious disorder (0.16%-11.1%) and separation anxiety disorder (0.5%-20.2%), which are specific of childhood [28, 29], whereas specific/simple phobia and social anxiety are both reported with less than 1% prevalence [29, 30].

The prevalence of depressive disorders in prepubertal children is around 1% - 2% [31, 32].

About 1% of children aged 3 to 10 suffer from Intellectual Disability (ID), which is the most common developmen-

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tal disorder [33, 34], 0.3-0.5% have an Autism Spectrum Disorder (ASD) [35-37], and 2%- 8% of children suffer from Learning Disabilities (LD), such as speech and language problems, dysgraphia, or dyslexia [38].

Finally, the prevalence of nocturnal enuresis in a school-children is estimated of 13%, with two thirds classified as suffering from primary enuresis [39, 40].

As, to our knowledge, no studies on the prevalence of mental disorders in children have been conducted in Italy to date, a representative sample of children attending primary school in Florence, Italy, were studied.

Teachers specially trained made the observations/diagnoses with the supervision of qualified psychiatrists.

## METHODS

The study was conducted on a school-survey sample of 1028 children aged between 6 and 11, attending primary school in the urban area of Florence, Italy.

According to the local regulation, during the primary phase of the compulsory education, children must attend a school located in the same geographic area of their residence. In order to obtain a representative sample of the Florentine children population, 2 primary public schools were selected for each of the 6 districts of the city of Florence. For each school, the number of classes to be examined depended on the population density of the corresponding area. The choice of the classes to be surveyed in each school relied basically on the availability of the teachers. In the present study there were 40 voluntary teachers, 40 classes, totalling 1028 school children. All these children were registered with the local education authority, and the sample closely matched the socioeconomic status of the city of Florence.

After the protocol was approved by the Department of Education of Florence, the study was proposed to the school directors, to the teachers, and finally to the parents. The study was proposed to 44 teachers, and 40 of them accepted to participate. The parents of 29 children refused to provide their consent, so that the final sample consisted of 999 school children, 506 boys and 493 girls, whose parents gave their written informed consent to participate in the study.

Teachers were chosen as lay-interviewers, as they spend much time with children, may observe them in their social context, and should be more objective than the parents [12]. Children in fact share a long time with teachers in their own daily social context, during the first cycle of compulsory education (by the age of 6 to 11 years old).

According to the Italian public school regulations, children had the opportunity to chose between "full-time" (about 8 hours a day, having lunch at school, five days per week), and "regular time" (about 5 hours a day, six days per week); in any case the same teacher was responsible of about 25 children during all the time.

The diagnoses were obtained by means an integration of the DSM IV [41] diagnostic algorithms, and the full description of each symptom (observation of children behaviour, interactions with teachers and peers).

Teachers received a specific and intensive training aimed at recognizing childhood symptoms, with a program that

included video training and role play, including clinical scenarios. At the end of the training period, the inter-rater reliability was compared both between different teachers, and between teachers and fully qualified psychiatrists, and was found satisfying (Kappa ranging from 0.83 to 0.97 for the various DSM IV diagnoses). The same procedure was repeated throughout the data collection, with approximately 20% of the accounts from the teachers' interviews reviewed, and compared with the diagnoses blindly given by a senior psychiatrist.

Most of DSM IV childhood disorders, overanxious disorder and phobias were considered and categorized into three major groups, as previously suggested [4-5, 42, 43]:

1. Behavioural/Impulse Control Disorders: attention-deficit hyperactivity disorder (ADHD), conduct disorder (CD), aggressiveness;

2. Anxiety Disorders: overanxious disorder, separation anxiety, phobias, sensitiveness, lack of self-confidence, avoidance;

3. Neurological Disorders: intellectual disability (ID), autism, stutter, enuresis, language disorders (LD), dyslexia, dysgraphia.

Major depression was also explored.

Lack of self-confidence, sensitiveness, aggressiveness, family, social, and overall functioning were also assessed.

Interviewers did not take into account disorders with expected low prevalence, such as psychotic disorders, substance abuse disorders, gender identity disorder, or childhood-onset bipolar disorder [5, 44, 45], and those disorders which were considered difficult to investigate by teachers (like elective mutism, reactive attachment disorder of infancy or early childhood and stereotypy/habit disorder). Moreover, eating disorders were not investigated because children eating behaviours during breakfast and dinner could not be observed in the school, and during lunch time teachers did not have meal together with the children.

The observation period ranged through the entire scholastic year.

Prevalence figures are reported with 95% confidence limits. Odds ratios with 95% C.I. and chi squares are used for comparisons between groups A stepwise binary logistic analysis with the risk of meeting any psychiatric disorder as dependent variable.

## RESULTS

999 children (506 males, 50.6%; 493 females, 49.4%) aged from 6 to 11, attending 12 primary schools of the Municipality of Florence, Central Italy, were investigated; the mean age was  $8.88 \pm SD 1.33$  years (range 6 to 11).

One hundred and four children (10.5%) were reported to have a psychiatric disorder, with a higher prevalence in males (66.7% vs.33.3,  $p < 0.01$ ). This gender difference was mainly due to the high prevalence of the behavioural/impulse control disorders group (7.2% of the sample, 72.2% males), whereas among the anxiety disorders group (6.4% of the sample) the male/female ratio was about 1 (Table 1).

Table 1. Prevalence of Mental Disorders

Diagnosis	Prevalence (%) 95 % C.I.	Males (%)	OR (Males/Females)
Autism	0.3 (-0.3-0.63) %	66.7	1.9 (0.2-21.6)
ADHD	5.6 (4.17-7.03)%	69.6	2.3 (1.3-4.2)
Separation anxiety	1.9 (1.05-2.74)%	52.6	1.1 (0.4-2.7)
Overanxious disorder	1.2 (0.52-1.87)%	50	0.9 (0.3-3.0)
Conduct disorder	1.0 (0.38-1.61)%	80	3.9 (0.8-18.6)
Intellectual disability	0.9 (0.31-1.48)%	66.7	1.9 (0.5-7.9)
Language disorders	0.9 (0.31-1.48)%	66.7	1.9 (0.5-7.9)
Dyslexia	0.6 (0.12-1.08)%	66.7	1.9 (0.3-10.7)
Dysgraphia	0.6 (0.12-1.08)%	66.7	1.9 (0.3-10.7)
Stutter	0.4 (0.008-0.79)%	75	2.9 (0.3-28.3)
Nocturnal enuresis	0.3 (-0.3-0.63) %	33.3	0.5 (0.0-5.4)
Major depression	0.2 (-0.076-0.47)%	100	0.9 (0.9-1.0)
Phobias	0.1 (-0.09-0.29)%	100	0.9 (0.9-1.0)
Lack of self-confidence	2.3 (1.37-3.23)%	47.8	0.9 (0.4-2.0)
Sensitiveness	1.3 (0.59-2.00)%	84.6	5.4 (1.2-24.7)
Aggressiveness	0.8 (0.24-1.35)%	75	2.9 (0.6-14.6)
Avoidance	0.2 (-0.076-0.47)%	50	0.9 (0.1-15.6)
Behavioural/impulse control disorders	7.2 (5.51-8.70)%	72.2	2.7 (1.6-4.6)
Anxiety disorders	6.4 (4.88-7.92)%	51.6	1.0 (0.6-1.7)
Neurological disorders	4.2 (2.95-5.44)%	61.9	1.6 (0.8-3.0)
Any diagnosis	10.5 (0.38-1.61)%	66.7	2.1 (1.4-3.2)

Attention-deficit hyperactivity disorder (ADHD) was the most common disorder (5.6% of the whole sample), with a significant higher prevalence in males (69.6% vs. 30.4%, OR =2.3, CI 95%; 1.3-4.2). All the other psychiatric disorders had prevalence rates < 1%, with the only exceptions of conduct disorder, separation anxiety and overanxious disorder.

Gender, organic diseases, attending school full-time, having a learning support teacher, parents' marital status, presence of other cohabitants in the familiar context were associated with an higher risk of suffering from any mental disorder (Table 2).

More specifically, among diagnostic groups, the absence of mother was associated with behavioural disorders, whereas the absence of father resulted as risk factor for both behavioural and anxiety disorders. The co-occurrence of organic diseases during the early childhood was associated with all the diagnostic groups. Attending the school full time (as opposed to half a day) was also associated with behavioural and neurological disorders (Table 3).

A binary logistic regression with having a psychiatric disorder as dependent variable (Table 4), confirmed that

gender, organic diseases and having mother divorced, not present, or dead were independently and significantly associated with the presence of a mental disorder.

## DISCUSSION AND CONCLUSIONS

The epidemiology of childhood psychiatric disorders is scarcely investigated, due to the methodological difficulties of assessing mental disorders in children [12]. There are few methods for the assessment of mental status in children [12], since the information provided by children are considered unreliable [17, 46]. In fact, children have poor insight, they often demonstrated a limited ability to recognize and be self-aware of their emotional and cognitive states, and have obvious difficulties to articulate and verbalize their feelings [47].

Furthermore, while parents, teachers, and paediatricians all serve as "gatekeepers" to the diagnosis [7], different informants will disagree about the real mental problem of the child [2, 8-10, 48]. Specifically, even if parents are usually the most important sources of information, as they are familiar with the child's behaviour across time and in many situations, they are too emotionally involved, so that they can

**Table 2. Socio-Familial Variables and their Association with any Diagnosis**

	Frequency in the Total Sample	Frequency in Children Affected by any Psychiatric Disorder	OR (95% CI)
<b>Gender</b>			
<b>Male</b>	50.7%	66.7%	2.1* (1.4-3.2)
<b>Female</b>	49.3%	33.3%	
<b>Organic disease</b>	4.7%	14.3%	4.5 (2.3-8.6)
<b>Attending school full-time</b>	61.8%	73.3%	1.8 (1.1-2.8)
<b>Learning support teacher</b>	2.5%	13.3%	12.3 (5.4-28.0)
<b>First-born</b>	57.8%	54.3%	1.2 (0.8-1.7)
<b>Presence of at least one brother/sister</b>	69%		
<b>1</b>	54.5%	69.5%	1.0 (0.6-1.6)
<b>2</b>	12.4%		
<b>3-5</b>	2.9%		
<b>Father marital status</b>			
<b>Married</b>	93.4%	19.0%	4.3 (2.4-7.6)
<b>Divorced, not present, or dead</b>	6.6%		
<b>Mother marital status</b>			
<b>Married</b>	98.8%	5.7%	8.9 (2.8-28.3)
<b>Divorced, not present, or dead</b>	1.2%		
<b>Father's occupation</b>			
<b>Employee</b>	34.2%	49.5%	
<b>Self-employed</b>	33.3%	32.4%	
<b>Workman</b>	16.4%	13.3%	-
<b>Teacher</b>	4.8%	5.7%	
<b>Unemployed</b>	0.6%	1.0%	
<b>Mother's occupation</b>			
<b>Employee</b>	32.5%	34.3%	
<b>Self-employed</b>	16.2%	21.0%	
<b>Workman</b>	5.6%	4.8%	-
<b>Teacher</b>	8.7%	5.7%	
<b>Housewife</b>	29.8%	25.7%	
<b>Nr of components of familiar nucleus</b>			
<b>≤2</b>	27.4%	72.4%	0.9** (0.6-1.5)
<b>&gt;2</b>	72.6%		
<b>Presence of other cohabitants</b>	12.6%	22.9%	2.3 (1.4-3.8)

\*: the OR is calculated as male/female.

\*\*: the OR is calculated as ≤2/&gt;2

be poorly objective and tend to value the symptoms with greater severity [11]. On the other hand, teachers are more likely than parents to notice emotional problems and describe social and learning problems in children [49]. This is due to the daily relationship between teachers and students, that allow to observe different behaviours outside of the

home setting, witness children in situations that provoke strong reactions and that expose them to multiple peers, and make accurate comparisons with children of similar ages [16, 17]. For these reasons, teachers are usually better at identifying children with behavioural problems than children with emotional problems [11, 16, 17]. Nonetheless,

Table 3. Correlations Between Different Variables and Groups of Disorders

	Behavioral Disorders	OR (95% CI)	Anxiety Disorders	OR (95% CI)	Neurological Disorders	OR (95% CI)
<b>Gender</b>	72.2% male 27.8% female	2.7* (1.6-4.6)	51.6% male 48.4% female	1.0* (0.6-1.7)	61.9% male 38.1% female	1.6* (0.8-3.0)
<b>Mother divorced, not present, or dead</b>	5.6%	6.7 (1.9-23.0)	3.1%	2.9 (0.6-13.9)	-	-
<b>Father divorced, not present, or dead</b>	16.7%	3.2 (1.6-6.4)	17.2%	3.3 (1.6-6.7)	23.8%	5.0 (2.3-10.7)
<b>Other cohabitants</b>	16.7%	1.4 (0.7-2.7)	17.2%	1.5 (0.7-2.9)	21.4%	1.9 (0.9-4.2)
<b>Organic disease</b>	11.1%	2.8 (1.3-6.3)	12.5%	3.3 (1.5-7.3)	16.7%	4.6 (1.9-10.9)
<b>Attending school full-time</b>	75.0%	1.9 (1.1-3.4)	60.9%	0.9 (0.6-1.6)	76.2%	2.0 (0.9-4.2)
<b>Learning support teacher</b>	5.6%	2.5 (0.8-7.6)	6.3%	2.9 (0.9-8.7)	19%	13 (5.2-32.2)

\*: the OR is calculated as male/female.

Table 4. Determinant of Mental Disorders in Childhood at Multivariate Analysis (Binary Logistic Regression)

	Presence of Any Psychiatric Diagnosis		
	B	p	OR (95% CI)
<b>Step 1</b>			
<b>Gender</b>	0.71	0.001	2.03 (1.33-3.11)
<b>Age</b>	-0.034	0.955	0.97 (0.83-1.12)
<b>Step 2</b>			
<b>Gender</b>	0.61	0.011	1.84 (1.14-2.95)
<b>Age</b>	0.07	0.37	1.07 (0.91-1.27)
<b>Attending school full-time</b>	-0.445	0.114	0.65 (0.38-1.07)
<b>Father divorced, not present, or dead</b>	0.570	0.16	1.99 (0.92-4.33)
<b>Mother divorced, not present, or dead</b>	1.504	0.041	5.84 (1.48-22.99)
<b>Other cohabitants</b>	0.493	0.13	
<b>Presence of at least one brother/sister</b>	0.123	0.60	1.13 (0.71-1.80)
<b>Father occupation</b>	-0.179	0.19	0.83 (0.63-1.09)
<b>Mother occupation</b>	0.031	0.80	1.03 (0.80-1.32)
<b>Organic disease</b>	1.055	0.007	2.87 (1.33-6.26)
<b>Special school-assistance</b>	0.884	0.068	2.42 (0.93-6.26)

**Statistics-** Stepwise Logistic Regression: effect of the socio-demographic characteristics on diagnosis, coded as dummy variables (presence of diagnosis: 1, absence: 0).

teachers are able to notice different aspects of the children and can use different parameters and methods to observe them [12-15].

In spite of our intensive training of the teachers with a program that included video training, role play and supervision of interviewers and the use of specific instructions and decision trees, as recommended and extensively used [1, 7, 47, 50-52], we are aware that children have been evaluated by one of the possible different viewpoints. This could mean that, while the abnormal behaviours are more likely to have been properly assessed, the detection of emotional problems could have caused more difficulties. This could be one of the reasons why the prevalence of behavioural disorders in our study is consistent with the literature, while that of emotional disorders is lower.

Our data about prevalence of psychiatric disorders in childhood generally confirm those reported in the literature [1, 6, 18, 20-26, 44, 53]. Prevalence of psychiatric disorders is 10.5%, with a male/female ratio of 2, due to the higher frequency of behavioural disorders in boys. Furthermore, ADHD is the most frequent diagnosis in our sample (5.6%), followed by separation anxiety disorder (1.9%) and overanxious disorder (1.2%).

Our findings are comparable with the literature as far as Behavioural/impulse control disorders [23, 26] (CD, ADHD and Aggressiveness, with a significantly higher prevalence in males), phobic disorders [29], avoidance, sensitivity and lack of self-confidence [30], mental retardation and autism [34-36], are concerned.

Conversely, anxiety disorders [28, 29], nocturnal enuresis [39], depressive disorders [31] and learning disorders [38] were lower than usually reported.

We have analyzed three main risk factors groups: biological, socio-familial and psychological ones.

About the first group, children with organic diseases are more prone to develop a psychiatric disorder, even an anxiety disorder, a behavioural disorder, or a neurological one.

Moreover, unlike other data reporting significant correlation between poverty status and developmental problems, or behavioural/conduct problems [18, 54], social class indicators (like living with other cohabitants, parents' marital status, parents' occupation, attending school full-time or regular time, etc.) was not found to be a significant risk factor for any mental disorder.

Furthermore, we observed that having a psychiatric disorder is significantly associated with attending school full-time, possibly due to the fact that families having children that need special assistance (like those with neurological disorders), or that are extremely hyperactive (like those with a behavioural disorder), consider the full-time as a better choice that can help them taking care of their children. Obviously, having or having had a learning support teacher is significantly correlated with the presence of a mental disorder in childhood.

About the last group, one of the most interesting finding is that the marital status of parents is correlated to the diagnoses. In fact, living with one only parent seems to be a

strong correlate of psychopathology, according to other studies [6]. In particular, our data show that having mother or father divorced, not present, or dead is a risk factor for developing a psychiatric disorder, respectively a behavioural or an anxiety disorder.

This result confirms the findings by Spencer *et al.* [26], that adverse family-environment variables (chronic family conflict, decreased family cohesion and exposure to parental psychopathology, particularly the maternal one) are more common in ADHD families compared with control families. Furthermore, two recent studies showed that living in a 2-parent household is associated with lower odds of experiencing special health care needs co-occurring with severe headaches, learning disabilities, behavioural/conduct problems, or emotional conditions in school-aged children [18, 54].

Behavioural disorders (CD, ADHD, Aggressiveness) in our sample show a significant higher prevalence in males. Eme [23] hypothesized that some neuropsychological impairments could mediate the risk for behavioural disorders, by causing deficits in executive and cognitive functioning, as deficits in the verbal domain, spatial and memory functions. These could lead to a more physically aggressive behaviour and may explain the higher prevalence of these disorders in male subjects [23].

Further long-term prospective studies are needed, in order to clarify the epidemiological and psychopathological relationships between childhood and adult mental disorders.

## AUTHORS' CONTRIBUTIONS

CF and SP conceived of the study, and participated in its design and coordination and helped to draft the manuscript. CLS, VR and GC have been involved in drafting the manuscript or revising it critically for important intellectual content. CF performed the statistical analysis. All authors read and approved the final manuscript.

## REFERENCES

- [1] Costello EJ, Egger H, Angold A. 10-Year research update review: the epidemiology of child and adolescent psychiatric disorders: i. methods and public health burden. *J Am Acad Child Adolesc Psychiatry* 2005; 44(10): 972-86.
- [2] Roberts RE, Attkisson CC, Rosenblatt A. Prevalence of psychopathology among children and adolescents. *Am J Psychiatry* 1998; 155(6): 715-25.
- [3] Angold A, Costello EJ, Erkanli A. Comorbidity. *J Child Psychol Psychiatry* 1999; 40: 57-87.
- [4] Kessler RC, Amminger GP, Aguilar-Gaxiola S, Alonso J, Lee S, Ustun TB. Age of onset of mental disorders: a review of recent literature. *Curr Opin Psychiatry* 2007a; 20(4): 359-64.
- [5] Kessler RC, Angermeyer M, Anthony JC, *et al.* Lifetime prevalence and age-of-onset distributions of mental disorders in the world health organization's world mental health survey initiative. *World Psychiatry* 2007b; 6(3): 168-76.
- [6] Frigerio A, Rucci P, Goodman R, *et al.* Prevalence and correlates of mental disorders among adolescents in Italy: the PrISMA study. *Eur Child Adolesc Psychiatry* 2009; 18(4): 217-26.
- [7] Horwitz SM, Leaf PJ, Leventhal JM. Identification of psychosocial problems in pediatric primary care. *Arch Pediatr Adolesc Med* 1998; 152: 367-71.
- [8] Gutterman EM, O'Brien JD, Young JG. Structured diagnostic interviews for children and adolescents. *J Am Acad Child Adolesc Psychiatry* 1987; 26: 621-30.

- [9] Edelbrock C, Costello AJ. Structured psychiatric interviews for children. In: Rutter M, Tuma AH, Lann IS, Eds. *Assessment and Diagnosis in Child Psychopathology*. New York: Guilford Press 1988; pp. 87-112.
- [10] Richters JE. Depressed mothers and informants about their children: a critical review of the evidence of distortion. *Psychol Bull* 1992.
- [11] Viñas Poch F, Jané Ballabriga MC, Canals Sans J, Esparó Hidalgo G, Ballepí Solà S, Doménech-Llaberia E. Assessment of psychopathology in preschool age children through the early childhood inventory-4 (ECI-4): agreement among parents and teachers. *Psicothema* 2008; 20(3): 481-6.
- [12] Costello EJ, Angold A, Burns BJ. The great smoky mountains study of youth: goals, design, methods, and the prevalence of DSM-III-R disorders. *Arch Gen Psychiatry* 1996; 53: 1129-36.
- [13] Fagot BI, Leve LD. Teacher ratings of externalizing behaviour at school entry for boys and girls: similar early predictors and different correlates. *J Child Psychol Psychiatry* 1998; 39(4): 555-66.
- [14] Kraemer HC, Measelle JR, Ablow JC, Essex MJ, Boyce WT, Kupfer DJ. A new approach to integrating data from multiple informants in psychiatric assessment and research: mixing and matching contexts and perspectives. *Am J Psychiatry* 2003; 160: 1566-77.
- [15] Hayden EP, Klein DN, Durbin CE. Parent reports and laboratory assessments of child temperament: a comparison of their associations with risk for depression and externalizing disorders. *J Psychopathol Behav Assess* 2005; 27: 89-100.
- [16] Saudino KJ, Ronald A, Plomin R. The etiology of behavior problems in 7-year-old twins: substantial genetic influence and negligible shared environmental influence for parent ratings and ratings by same and different teachers. *J Abnorm Child Psychol* 2005; 33: 113-30.
- [17] Jané MC, Canals J, Ballepí S, Viñas F, Esparó G, Doménech E. Parents and teachers reports of DSM-IV psychopathological symptoms in preschool children: differences between urban-rural Spanish areas. *Soc Psychiatry Psychiatr Epidemiol* 2006; 41(5): 386-93.
- [18] Newacheck PW, Kim SE, Blumberg SJ, Rising JP. Who is at risk for special health care needs: findings from the national survey of children's health. *Pediatrics* 2008; 122(2): 347-59.
- [19] McDonnell MA, Glod C. Prevalence of psychopathology in preschool-age children. *J Child Adolesc Psychiatr Nurs* 2003; 16(4): 141-52.
- [20] Anderson JC, Williams S, McGee R, Silva PA. DSM-III disorders in preadolescent children. Prevalence in a large sample from the general population. *Arch Gen Psychiatry* 1987; 44(1): 69-76.
- [21] Fombonne E. The chartres study: I. Prevalence of psychiatric disorders among French school-age children. *Br J Psychiatry* 1994; 164(1): 69-79.
- [22] Costello EJ, Foley DL, Angold A. 10-year research update review: the epidemiology of child and adolescent psychiatric disorders: II. Developmental epidemiology. *J Am Acad Child Adolesc Psychiatry* 2006; 45(1): 8-25.
- [23] Eme RF. Sex differences in child-onset, life-course-persistent conduct disorder. A review of biological influences. *Clin Psychol Rev* 2007; 27(5): 607-27.
- [24] Pastura G, Mattos P, Araújo AP. Prevalence of attention deficit hyperactivity disorder and its comorbidities in a sample of school-aged children. *Arq Neuropsiquiatr* 2007; 65(4A): 1078-83.
- [25] Polanczyk G, Rohde LA. Epidemiology of attention-deficit/hyperactivity disorder across the lifespan. *Curr Opin Psychiatry* 2007; 20(4): 386-92.
- [26] Spencer TJ, Biederman J, Mick E. Attention-deficit/hyperactivity disorder: diagnosis, lifespan, comorbidities, and neurobiology. *Ambul Pediatr* 2007; 7(1 Suppl): 73-81.
- [27] Labellarte MJ, Ginsburg GS, Walkup JT, Riddle MA. The treatment of anxiety disorders in children and adolescents. *Biol Psychiatry* 1999; 46(11): 1567-78.
- [28] Merikangas KR. Vulnerability factors for anxiety disorders in children and adolescents. *Child Adolesc Psychiatr Clin N Am* 2005; 14: 649-79.
- [29] Cartwright-Hatton S, McNicol K, Doubleday E. Anxiety in a neglected population: prevalence of anxiety disorders in pre-adolescent children. *Clin Psychol Rev* 2006; 26: 817-33.
- [30] Chavira DA, Stein MB. Childhood social anxiety disorder: from understanding to treatment. *Child Adolesc Psychiatr Clin N Am* 2005; 14: 797-818.
- [31] Zalsman G, Brent DA, Weersing VR. Depressive Disorders in Childhood and Adolescence: An overview Epidemiology, Clinical Manifestation and Risk Factors. *Child Adolesc Psychiatr Clin N Am* 2006; 15: 827-41.
- [32] Calles Jr JL. Depression in Children and Adolescents. *Prim Care* 2007; 34(2): 243-58.
- [33] Bhasin TK, Brocksen S, Avchen RN, Van Naarden Braun K. Prevalence of four developmental disabilities among children aged 8 years--Metropolitan Atlanta Developmental Disabilities Surveillance Program, 1996 and 2000. *MMWR Surveill Summ* 2006; 55(1): 1-9.
- [34] Pratt HD, Greydanus DE. Intellectual Disability (Mental Retardation) in Children and Adolescents. *Prim Care* 2007a; 34(2): 375-86.
- [35] Barbaresi WJ, Katusic SK, Voigt RG. Autism: a review of the state of the science for pediatric primary health care clinicians. *Arch Pediatr Adolesc Med* 2006; 160(11): 1167-75.
- [36] Autism and Developmental Disabilities Monitoring Network Surveillance Year 2000 Principal Investigators; Centres for Disease Control and Prevention. Prevalence of autism spectrum disorders--autism and developmental disabilities monitoring network, six sites, United States, 2000. *MMWR Surveill Summ* 2007; 56(1): 1-11.
- [37] Williams E, Thomas K, Sidebotham H, Emond A. Prevalence and characteristics of autistic spectrum disorders in the ALSPAC cohort. *Dev Med Child Neurol* 2008; 50(9): 672-7.
- [38] Pratt HD, Patel DR. Learning Disorders in Children and Adolescents. *Prim Care* 2007b; 34(2): 361-74.
- [39] Devlin JB. Prevalence and risk factors for childhood nocturnal enuresis. *Isr Med J* 1991; 84(4): 118-20.
- [40] Al-Ghamdy YS, Qureshi NA, Abdelgadir MH. Childhood enuresis. Epidemiology, pathophysiology and management. *Saudi Med J* 2000; 21(2): 138-44.
- [41] American Psychiatric Association. *Diagnostic and statistical manual of mental disorders 4<sup>th</sup> ed.* Washington DC: American Psychiatric Press 1994.
- [42] Gadow KD, Sprafkin J, Nolan EE. DSM-IV Symptoms in community and clinic preschool children. *J Am Acad Child Adolesc Psychiatry* 2001; 40(12): 1383-92.
- [43] Remschmidt H, Theisen FM. Schizophrenia and related disorders in children and adolescents. *J Neural Transm Suppl* 2005; (69): 121-41.
- [44] Ciechomski L, Blashki G, Tonge B. Common psychological disorders in childhood. *Aust Fam Physician* 2004; 33(12): 997-1003.
- [45] Rutter M, Kim-Cohen J, Maughan B. Continuities and discontinuities in psychopathology between childhood and adult life. *J Child Psychol Psychiatry* 2006; 47(3-4): 276-95.
- [46] Edelbrock C, Costello AJ, Dulcan MK, Kalas R, Conover NC. Age differences in the reliability of the psychiatric interview or the child. *Child Dev* 1985; 56: 265-275.
- [47] Ostrander R, Crystal DS, August G. Attention deficit-hyperactivity disorder, depression, and self- and other-assessments of social competence: a developmental study. *J Abnorm Child Psychol* 2006; 34(6): 773-87.
- [48] Edelbrock C, Costello AJ. Convergence between statistically derived behaviour problem syndromes and child psychiatric diagnoses. *J Abnorm Child Psychol* 1988; 16(2): 219-31.
- [49] Ezpeleta L, de la Osa N, Doménech JM, Navarro JB, Losilla JM, Júdez J. Diagnostic agreement between clinicians and the Diagnostic Interview for Children and Adolescents--DICA-R--in an outpatient sample. *J Child Psychol Psychiatry* 1997; 38(4): 431-40.
- [50] Jellinek MS, Murphy JM, Little M, Pagano ME, Comer DM, Kelleher KJ. Use of the pediatric symptom checklist to screen for psychosocial problems in pediatric primary care: a national feasibility study. *Arch Pediatr Adolesc Med* 1999; 153(3): 254-60.
- [51] Riekert KA, Stancin T, Palermo TM, Drotar D. A psychological behavioral screening service: use, feasibility, and impact in a primary care setting. *J Pediatr Psychol* 1999; 24(5): 405-14.
- [52] Gardner W, Kelleher KJ, Pajer KA, Campo JV. Primary care clinicians' use of standardized psychiatric diagnoses. *Child Care Health Dev* 2004; 30(5): 401-12.

- [53] Canino G, Shrout PE, Rubio-Stipec M, *et al.* The DSM-IV rates of child and adolescent disorders in Puerto Rico: prevalence, correlates, service use, and the effects of impairment. *Arch Gen Psychiatry* 2004; 61(1): 85-93.
- [54] Hölling H, Schlack R. Psychosocial risk and protective factors for mental health in childhood and adolescence - results from The German Health Interview and Examination Survey for Children and Adolescents (KIGGS). *Gesundheitswesen* 2008; 70(3): 154-63.

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Received: July 25, 2009

Revised: October 05, 2009

Accepted: October 05, 2009

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