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Anxiety Syndromes and Their Correlates in Children and Adolescents: A Two-Year- Follow-Up Study at Primary Health Care in Mexico City

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Additional information is available at the end of the chapter

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1. Introduction

Anxiety disorders are among psychiatric conditions the earliest to manifest, with a median age at onset of 15 years, using retrospective information (WHO ICPE, 2000). As a group, anxiety disorders are frequent and persistent in childhood and adolescence. The prevalence of anxiety disorders in nonreferred children 4-6 years old has been estimated in 6.1% (Briggs-Gowan et al., 2000), and studies on older children and adolescents have reported lifetime prevalence ranging from 8.3% to 27.0% (Costello et al., 2005). Separation anxiety disorder (SA), specific phobias (SP) and generalized anxiety disorder (GA) are the most common. Left untreated, anxiety disorders tend to have a chronic and unremitting course (Yonkers et al., 2003; Ramsawh et al., 2009) and also increase the risk for adult psychiatric disorders (Pine et al., 1998; Costello et al., 2011).

In primary care settings studies have shown that approximately 9% to 15% (Benjamin et al., 1990; Costello, 1989) of 7- to 11-year-olds meet the criteria for an anxiety disorder, and at least 17% in pediatric patients (Chavira et al., 2004). Most contact with GPs is for physical health problems; only 2-5% of child and adolescent consultations involve presentations with emotional or behavioural problems (Giel et al., 1981). Pediatric anxiety disorders often feature somatic complaints such as abdominal pain, chest pain or discomfort, headaches, nausea, or vomiting, and are often comorbid with medical conditions such as asthma and other atopic disorders (Ramsawh et al., 2010). However, children and adolescents with mood and anxiety disorders in primary care and pediatric settings are underrecognized, not commonly

treated onsite, and less likely than youths with behavioral disorders to be referred to specialized mental health settings (Wren et al., 2003, 2005).

Mental health presentations may also relate to educational or social issues and other risk factors for functioning and development rather than to diagnosable disorders per se. In children, anxiety disorders can be associated with school absenteeism or school refusal, poor academic performance, or grades that are lower than would be expected based on the child's abilities (Mazzone et al, 2007). It is the concerns of parents that typically alert the primary care clinician to psychosocial issues (Dulcan et al., 1990), but parents are often either unaware of their child's internalizing symptoms or do not see a need for services (Wu et al., 1999; Caraveo et al., 2002).

2. Mental health surveillance for children and adolescents: A pilot study at a primary care center in Mexico City

2.1. Background

Having identified that children's and adolescent's mental health problems are frequent and unrecognized conditions in Mexico City (Caraveo et al, 2002) and that an epidemiological study on the general population showed evidence about the familial risk for developing psychopathology across three generations (Caraveo et. al., 2005), a pilot study aimed on the surveillance of children's and adolescent's mental health at primary care level was launched. The initiative was conceived as a potential action-research oriented project for the enhancement of the role of primary care in the preventive actions that are needed for mental health care. Primary care has great potential as a source of education, triage, and frontline intervention. However, this role requires simple and efficient methods and tools to accurately identify, in collaboration with the family, the child's core areas of difficulty (Wren et al., 2005).

Eventually, the information to be gathered by this program may contribute to a better understanding of the natural history of different psychiatric syndromes and disorders such as attention deficit and hyperactivity disorder, affective disorders, anxiety disorders and other neuro-psychiatric conditions. All of these produce varying degrees of handicap and may create a risk for other disorders such as alcohol and drug abuse (Merikangas et al., 1998; Hofstra et al. 2000), hence the importance of their surveillance, early detection and care.

As a first step in the development of this pilot study, the concurrent validity and efficiency of the Brief Screening and Diagnostic Questionnaire (CBTD for its initials in Spanish) was evaluated. The CBTD was built based on our previous experience using the Report Questionnaire for Children, RQC (Caraveo et al., 1995) adding 17 items to explore symptoms frequently reported as motives for seeking attention at the out-patient mental health services. The aim was to include cardinal symptoms that could lead to identify probable specific syndromes and disorders, based on the parent's report. The instrument was tested and further developed using information gathered from a general population sample. Internal consis-

tency showed a Cronbach's alpha of 0.81 with a 0.75-0.85 range by age groups; cluster and factor analyses identified eight groups of symptoms that correlate with the most frequent syndromes seen in children and adolescents (Caraveo, 2006). Logistic regression analyses were then performed between cardinal symptoms for different diagnoses and the rest of the items from the questionnaire, and statistically significant associations were evaluated clinically and compared to psychiatric syndromes as defined by the DSM-IV (APA, 1994) and the ICD-10 (WHO, 1993) classifications. Based on these results, algorithms for probable psychiatric syndromes, including subclinical forms, were created (Caraveo, 2007a) and the concurrent validity between some of them and the psychiatric diagnoses of children who received care at two out-patient mental health services showed a fair agreement (Yule's Y: 0.43- 0.55; Caraveo, 2007b). However, as psychiatric diagnoses did not follow a structured clinical interview, there was the need to confirm these results using a standardized evaluation and on primary health attendants in order to evaluate the screening instrument adequacy for establishing a surveillance of mental health in childhood and adolescence.

Results showed an overall Sensitivity of 68%, Specificity of 82%, Positive Predictive Value (PPV) of 88% and a Negative Predictive Value (NPV) of 57%. When two or more CBTD syndromes are present the PPV is almost 100%. Concurrent validity showed a fair agreement for most of the CBTD syndromes as compared to DSM-IV diagnoses (Caraveo et al., 2011).

Once established the validity and efficiency of CBTD as the basic tool for screening purposes, an impairment measurement was considered as a priority for the surveillance pilot study, along with the obtention of psychiatric antecedents in both parents. Also, as besides genetic predisposition a variety of mechanisms have been postulated as being responsible for intergenerational continuity of psychopathology such as impairments in parenting and dysfunctional family relationships (Malcarne et al., 2010), and because along the field work of the surveillance study, these issues were frequently reported by the population, they were subsequently assessed during the two-year follow-up.

As this chapter is focused on anxiety disorders in children and adolescents, we will review research on these aspects as related to anxious children and adolescents.

2.1.1. Familial antecedents

Findings from family studies, either using a "top-down" design where the children of parents with anxiety disorders are evaluated or a "bottom-up" design which ascertain the parents of children with anxiety disorders, have clearly establish the cross-generation transmission of anxiety from parents to children (Klein & Pine, 2002). A detailed revision of the literature has been presented in a previous work (Caraveo-Anduaga, 2011).

An epidemiological study on the general population of Mexico City investigated the presence of psychopathology across three generations (Caraveo et al., 2005). Anxiety syndromes, as defined in the Brief Screening and Diagnostic Questionnaire (CBTD) showed a familial transmission pathway that is consistent with results from studies on Caucasian populations in developed countries (Klein & Pine, 2002), suggesting that familial risk for devel-

oping anxiety disorders is a fact, thus not limited by ethnicity or culture, but mediated by socio-economic conditions (Caraveo-Anduaga, 2011).

Results showed that comorbid anxiety disorders in grandparents seem to interact with anxiety-only as well as with anxiety comorbid disorders in parents, determining a robust morbid risk for the generalized anxiety screening syndrome in descendants, while the familial anxiety risk across generations for the anxiety with inhibition syndrome is less pronounced.

Results considering only the adult proband's information showed that parent's history of anxiety-only as well as comorbid anxiety-depression were significantly associated with both screening anxiety syndromes in their offspring. Male children developed more generalized anxiety as compared to females, and the relationship with spouse was inversely associated with the presence of the syndrome of anxiety with inhibition in the descendant. Additionally, household higher income showed a significant association with the presence of the generalized anxiety syndrome in the children, and poor adult proband's own health perception was associated with both anxiety syndromes in their offspring (Caraveo-Anduaga, 2011).

A limitation of the study was that as the principal objective of the survey was focused on adult population, only one adult was selected at each household, and so familial risk across generations, was based on information about only one parent.

2.1.2. Functional impairment

Functional impairment describes the impact of psychopathology on the life of the child with respect to daily life activities (Üstun & Chatterji, 1997); it refers to ways in which symptoms interfere with and reduce adequate performance of important and desired aspects of the child's life (Rapee et al., 2012). Most common conceptualisations indicate three areas of impairment within family, school and social domains. Ezpeleta et al. (2001) identified three dimensions: interference with parents, peers and education.

Different authors have shown the importance of including impairment indicators in the diagnostic definitions in order to reduce the prevalence rates of the disorders in epidemiological studies (Bird et al., 1988; Roberts, et al., 1997; Shaffer, et al, 1996; Simonoff et al., 1997). The knowledge of the degree of impairment is also necessary for the proper identification of those persons affected by a psychological disorder or in need of psychological help.

Measures of functional impairment besides being an aid in case definitions in epidemiological studies and in nosology are useful for studies of treatment effectiveness, planning services, service eligibility determination, evaluating and planning of programs, but, mainly, they are used as outcome indicators (Ezpeleta et al., 2006).

Available instruments of level of functioning could be classified either as one-dimensional or multidimensional. For the definition of impairment three primary measurement strategies have been identified (Bird et al., 2000): a) measures that incorporate the symptoms and their correlates into the definition of disorder, b) specific impairment measures associated with each diagnosis, and c) global omnibus impairment measures.

Goals for assessment of functional impairment should help to decide what the best strategy is. If the goal is to decide if a child needs intervention or not, a global strategy could be used, but if the objective is to plan the areas of intervention, then a decomposed instrument could be more appropriate.

Anxiety disorders are especially susceptible to impairment thresholds; however, the importance of impairment is uncertain in early diagnoses. Moreover, anxiety symptoms that are not impairing in early childhood may become so as development and life-experiences continues (Malcarne et al., 2010). Thus, knowledge of the degree of impairment is a necessary component for the surveillance of anxiety and other children's mental health disorders at the primary care level.

Kashani & Orvaschel (1990) in a community sample of 210 children and adolescents found that children diagnosed with anxiety disorder demonstrated greater impairment on both the physical and cognitive measures on self-competence, temperamental flexibility, and levels of self-esteem than non-clinic controls. Research on the psychosocial implications of anxiety indicates the disabling consequences affecting schooling and academic functioning, peer relationships, autonomous activities, self-esteem, family functioning and overall psychosocial impairment (Strauss et al, 1988; Bell-Dolan & Brazeal, 1993; Kendall et al., 1992; Wittchen, Nelson & Lachner, 1998; Essau et al., 2000).

Manassis and Hood (1998) determined the correlates of anxiety disorders that were predictive of impairment. They concluded that predictors were different depending on disorder. The impairment for generalized anxiety disorder was mainly determined by psychosocial adversity, but in the case of phobia, it was determined by mothers' ratings of conduct problems of the child, the depressive symptoms reported by the child, the maternal phobic anxiety, and the development difficulties suffered by the child.

Whiteside (2009) found that the greatest impairment report from both the child and parents was associated with obsessive-compulsive disorder and social anxiety disorder, followed by separation anxiety disorder, and then generalized anxiety disorder. Thus, level of impairment seems to be associated with the type of anxiety disorder. However, literature suggests that there are many shared risk or associated factors for psychiatric morbidity and functional impairment in children (Wille N, et al, 2008).

2.1.3. Child-rearing and parenting practices

Darling and Steinberg (1993) defined child-rearing style as 'a constellation of attitudes toward the child that are communicated to the child and create an emotional climate in which the parent's behaviours are expressed'; it describes the quality of the parent-child relationship, whereas parenting practices describes the content and frequency of specific parenting behaviour (Stevenson-Hinde, 1998).

In the literature on child-rearing style, the term 'care' is interchangeably used with warmth, acceptance, nurturance, affection, responsiveness or supportiveness on the one end of the dimension and rejection, hostility or criticism on the other.

Ever since the seminal paper of Bell and Chapman (1986) about the child's influence on parental behaviour, parenting is no longer considered to be a purely parental characteristic affecting the child, but rather an interactional phenomenon in which parent and child participate and reciprocally influence one another.

Relationship may be reciprocal, that is, anxious child influences the parental style exhibited and vice versa (Samerof & Emde, 1989; Thomasgard & Metz, 1993; Bögels and Brechman-Toussaint, 2006).

Behavioural genetic research (Rowe & Plomin, 1981; Plomin & Daniels, 1987) has shown that environmental factors that all children in a family share may have a different influence than those that are unique. Child-rearing style is often considered to belong to the shared environment, but when the contribution of the child to parenting style is taken into consideration, it should rather be regarded as part of the nonshared environment. When differences in parenting behaviour regarding different children within the same family are very outspoken, this is called parental differential treatment (Lindhout, 2008).

Anxiety disorders could be conceptualized, considering the multi factorial aetiological view of the phenomenon, as a self-perpetuating cycle of elevated biological responses to stress, debilitated cognition and avoidance of stressful circumstances reinforced by environmental factor including a parenting style, which interferes with children's attempts at solving their own problems, and instead emphasizes threat in situations, and encourages children's avoidance behavior. The exposure to traumatic or aversive situations also increases the risk of children developing anxious responses (Webster, 2002).

Studies have shown that parents of anxious children behave in ways that increase the chance that their child behaves in an anxious manner. High levels of maternal control and anxiety, and maternal rejection and depression (Rapee, 1997) as well as less accepting, aversiveness, intrusiveness, overinvolved, over protective and more controlling parenting styles have been found associated with anxiety disorders in children (Siqueland et al., 1996; Hudson & Rapee, 2001; Wood et al., 2003; Moore et al., 2004; McLeod et al., 2007; Hudson et al., 2008).

2.1.4. Family style of solving problems and domestic violence

Family relationships are viewed as critical factors influencing a child's social and emotional development (Hannan & Luster, 1991; Levitt, 1991). A number of broad classes of dysfunction such as psychosocial stress, poverty, parental marital discord, parental psychopathology, maltreatment, and parental emotional unavailability, have been associated with both internalizing and externalizing problems (Gotlib & Avison, 1993).

Exposure to conflict has been shown to influence children directly. Witnessing adult anger is physiologically and affectively stressful for children, and exposure to conflict has been shown to influence children indirectly through its effect on parenting and parents' psychological wellbeing. Some researchers have shown that the effects of parental conflict can be more harmful to children than parental absence through death or divorce (Emery, 1982; Jekielek, 1998; Mechanic & Hansell, 1989; Peterson & Zill, 1986). Marital fighting has been

found to be more predictive of children's functioning than divorce (Cummings, 1994; Jekielek, 1998). More specifically, the quality of the marital relationship in early life has been found to predict future anxiety in the child (Bögels & Brechman-Toussaint, 2006).

In children exposed to chronic violence, increasing sensitization has been reported. Hennessey et al. (1994) found that children exposed to violence, in comparison to peers, were more fearful and emotionally reactive to videotaped scenes of anger between adults. Sensitization may be related to hypervigilance, the tendency to anxiously scan the environment for possible threat that is one of the hallmarks of posttraumatic stress.

Also, deficits in emotion regulation have been observed in children exposed to uncontrolled anger and distress in the very figures they would turn to for soothing and solace (Graham-Bermann & Levendosky, 1998).

Exposure to violence at home is recognized as a form of child maltreatment. Witnessing domestic abuse, especially when it is perpetrated against the mother, in itself is a traumatic experience. Although children growing up in violent homes do not consistently show cognitive deficits, they often display academic problems. Distractibility and inattention in school may occur as a result of the trauma that is associated with exposure to violence. Research suggest that children exposed to domestic violence show a range of emotional and behavioral problems including insecure attachment in younger children and both externalizing and internalizing problems in the school years (Wenar & Kerig, 2006).

Some children experience negative effects in the short term, others have both short and longer term effects, and still others seem to experience no effects related to witnessing violence. Children's age and sex, as well as severity, intensity and chronicity of the violence are variables that play a role in the outcome of the exposure. In a longitudinal study of a sample of 155 children followed from birth through adolescence, Yates et al. (2003) found that exposure to violence in the home was an independent predictor of externalizing problems in boys and internalizing problems in girls. A study in Canada reported that children aged 4 to 7 years old who witnessed violence at home showed more overt aggression two and four years later. For boys the experience was also linked to indirect aggression, and for girls, with anxiety (Moss, 2003).

2.2. Objective

This chapter will focus on testing whether the basic issues included for the surveillance of mental health in childhood and adolescence are somehow significantly associated with the presence of anxiety syndromes in children and adolescents attended at a primary care setting and followed along a two-year period.

The specific goals for this report are:

1. Confirm familial associations between parental psychiatric history and anxiety CBTD screening syndromes in their offspring.
2. Determine if a higher score on the scale for the assessment of impairment is associated with anxiety CBTD screening syndromes in children and adolescents.

3. Determine if a higher score on the scales examining child-rearing and parental practices are associated with anxiety CBTD screening syndromes in children and adolescents.
4. Determine if a higher score on the scale for the assessment of a potential dysfunctional environment at home is associated with anxiety CBTD screening syndromes in children and adolescents.
5. Evaluate the morbid risk of these variables for the development of anxiety CBTD screening syndromes.

2.3. Method

All consecutive children and adolescents aged 4 to 16 years attended during a six-month period at a primary care health center (PCHC) were included for this study. Children and adolescents already in treatment at the mental health service were excluded. Informed consent was obtained from the parents of the minors at the beginning of the study. At the initial interview, socio demographic data was obtained and parents responded the Brief Screening and Diagnostic Questionnaire (CBTD). Whenever a probable case was detected, parents were advised to seek help from the mental health service at the PCHC or at another facility. The cohort was followed for two years (2005-2007); at each consecutive evaluation a follow-up version of the CBTD was used and complementary information was gathered at different points of time as will be explained.

2.3.1. Instruments

1. The Brief Screening and Diagnostic Questionnaire (CBTD for its initials in Spanish) is a 27-item questionnaire answered by the parents of the child exploring symptoms frequently reported as motives for seeking attention at the outpatient mental health services. Presence of the symptom requires that each item has to be reported as "frequently" presented. The internal consistency of the questionnaire showed a Cronbach's alpha of 0.81, range: 0.76 to 0.85 (Caraveo, 2006). Diagnostic algorithms in order to define probable DSM-IV disorders in children were created based on data from the general population epidemiological study (Caraveo, 2007a). The generalized anxiety screening syndrome was defined as follows: Key symptom: a positive response to the question: Does the child gets scared or nervous for no good reason?, and at least two of the following: can't seat still, irritable, sleep problems, and frequent nightmares. The anxiety with inhibition screening syndrome was defined as follows: Key symptom: a positive response to the question: Is the child excessively dependent or attached to adults?; and at least two positive answers on the following: aloof, frequent headaches, afraid of school, physical complains without a medical problem, sleep problems, low weight, overweight, do not work at school, and backward compared to other children. Concurrent validity of the two screening anxiety syndromes, generalized anxiety and anxiety with inhibition, as compared to DSM-IV anxiety diagnoses using the E-MiniKid standardized interview (Sheehan et al., 1998; 2000) showed Kappa agreement to be 0.53 and 0.68 respectively, and using Yule's Y coefficient results were 0.65 and 0.92 respectively.

Receiver Operating Characteristic Curves (ROC) analyses showed Area under the Curve (AUC) to be 0.82 and 0.78 respectively (Caraveo-Anduaga et al., 2011).

2. Psychiatric parental antecedents about anxiety, affective and substance-use disorders were obtained following the Family-history research criteria (Andreasen et al., 1977; 1986; Kendler et al., 1997) as was used in the general population study (Caraveo-Anduaga, 2011).
3. Functional impairment in children and adolescents was measured using the Brief Impairment Scale (BIS) (Bird et al., 2005) which is a 23-item questionnaire that has three sub-scales exploring interpersonal relationships, work/school performance and self-attitudes. Each question is responded in Likert scale with 4 options: 0= never or no problem; 1= some problems; 2= several problems; 3= serious problems. The internal consistency of the BIS in our population showed a Cronbach's alpha of 0.87.
4. The Parent Practices Inventory (PPI) (Bauermeister et al. 1995 as presented in Barkley R., Murphy K. & Bauermeister J., 1998) is a 37-item questionnaire exploring child-rearing as well as disciplinary practices. Two dimensions were identified: a positive one that considers approval, acceptance, positive motivation and affection as predominant practices, while the negative dimension includes inconsistency, cohesion and negative affect. Each question is evaluated in a 4-point Likert scale: 0= never or almost never; 1= rarely; 2= frequently; 3= very frequently. The internal consistency of the PPI in our population showed a Cronbach's alpha of 0.87.
5. The style of solving problems at home was explored with a 7-item scale adapted from answers used by Kessler in the National Comorbity Study. In the present study they were asked as follows: All persons solve their conflicts in different manners. How often do you and your spouse/partner display the following conducts when there is a conflict? Insults or swore; become furious; sulk or refuse to talk; stomp out of the room; say something to spite; threaten to hit; smash or kick something in anger. Each item is responded in a 4-point Likert scale: 0= never; 1= rarely; 2= sometimes; 3= always. The internal consistency of this scale in our population showed a Cronbach's alpha of 0.98. If some kind of physical violence was reported on the previous scale, it was asked if the child have witnessed the episodes.

2.3.2. Procedure

Field work started on May of 2005 and in an intensive way, children and adolescents aged 4 to 16 years attending the general health clinicians at the PHC were assessed. During the vacation period, months of July and August, attendance during the morning turn was numerous but after that, it was practically reduced to the afternoon turn. Moreover, new eligible subjects became fewer, so that in December it was decided to end the incorporation phase of the study and start preparing the first follow-up evaluation.

Besides the clinical evaluation using the CBTD in a follow-up version, information about familial psychiatric antecedents of both parents, (that was initiated during the last two months of the incorporation phase), as well as the assessment of impairment in the child us-

ing the BIS were systematically obtained. It is important to note that even though follow-up evaluations were cost-free and that reminder of appointments were made, the participation of the study population was scarce as shown in Table 1. In order to deal with this, telephone interviews were carried out by the child psychiatrists working in the project under the supervision of the principal researcher (JC).

For the second follow-up, assessments started on July 2007; based on the previous field clinical work, it was decided to incorporate measures of parental child-rearing practices and of domestic violence. Also, besides clinical follow-up appointments at the PHC, and telephone interviews, it was decided to have home-interviews. For this purpose, psychologists with experience in community studies were trained in the use of all the instruments, and a computerized program was created in order to facilitate the assessments, control, and management of the information. This strategy proved to be more efficient as a higher participation of the study population was accomplished; although losses were considerable as shown in Table 1. At each follow-up interview, we look for that preferably the informant would be the same person as in the initial assessment.

2.3.3. Analyses

Longitudinal morbid risk in terms of the odds ratio was calculated using the random effects logistic regression analysis as our interest was in the individual development over time of dichotomous outcome variables (Twisk, 2003), for this chapter the two screening anxiety syndromes in children and adolescents.

Bivariate analyses between anxiety syndromes and each independent variable were performed. Scores of the different scales used in the study were converted into dummy variables using quartiles, where higher scores indicated major problems. As each independent variable of interest and its corresponding measure was incorporated at different times along the study period, the number of observations are somehow different in each analysis.

Multivariate analysis including all variables was performed in terms of the odds ratio using the random effects logistic regression analysis. It was assumed that child-rearing practices as well as the style of solving problems at home were the same during the two-year period.

2.4. Results

A total cohort of 846 consecutive children and adolescents patients attended at the PHC was initially evaluated. Girls represented 55% and boys 45%, with a mean age of 9 years (s.d. 3.5). On 87% the informant was the child's mother. For 60% of the cohort at least one follow-up was completed, and in 21% two follow-up interviews were done (Table 1).

Children/ Adolescents	Initial Evaluation	1 year follow-up		2 year follow-up	
		N	%	n	%
Interviewed	846	100	298	35.2	454
Not interviewed	-	-	548	64.8	392

Table 1. Interviewed population

The total prevalence of the anxiety screening syndromes at the initial interview was 29.4% (95%CI: 26.4, 32.5) for the generalized anxiety syndrome, and 31.2% (95%CI: 26.4, 35.9) for the anxiety with inhibition syndrome. Both anxiety syndromes were slightly more frequently reported in boys than in girls. In adolescents anxiety syndromes were more frequent among girls. Prevalence of both anxiety syndromes tended to be somehow similar to the initial prevalence at the one-year follow-up, but they both considerably diminished at the two-year follow-up; prevalence of anxiety with inhibition decreased to be less than a half of the initial prevalence (Table 2).

2.4.1. Is the morbid risk higher for developing anxiety syndromes in the offspring when anxiety parental psychiatric antecedents are present as compared to when they are not?

The analysis of the association between specific types of psychiatric parental antecedents and the two anxiety syndromes in the offspring shows that parental antecedents of anxiety-only, and comorbid anxiety with depression, as well as with substance abuse are significantly associated with both types of anxiety syndromes in the offspring. Parental antecedents of depression are associated with generalized anxiety syndrome in the offspring, but the odds ratio is considerably lower; and parental antecedents of substance abuse alone, are not significantly associated with neither anxiety syndromes in the offspring (Table 3).

2.4.2. Does a higher impairment score is significantly associated with each anxiety syndrome? If so, is it different for each anxiety disorder?

For this analysis, 741 observations were included; 187 correspond to observations on subjects presenting generalized anxiety, 25.5%, and 135 presenting anxiety with inhibition, 18.2%.

For the next tables, on the second column, the proportions of observations with each anxiety syndrome as related to scores on the BIS are presented. The odds ratio in tables represent the longitudinal strength of the association between those observed subjects with anxiety syndromes within the corresponding quartile of the impairment scale as compared to observed subjects with anxiety syndromes within the first quartile.

Initial assessment	4 – 5	6 – 8	9 – 12	13 – 16	TOTAL (95%CI)
Boys	(n= 88)	(n= 99)	(n= 128)	(n= 66)	(N= 381)
Generalized anxiety	29.5	34.3	36.0	22.7	31.5 (26.8, 36.2)
Anxiety with inhibition	43.2	38.4	28.0	18.2	33.3 (26.0, 40.6)
Girls	(n= 87)	(n= 112)	(n= 157)	(n= 109)	(N= 465)
Generalized anxiety	20.7	29.5	26.7	33.0	27.7 (23.6, 31.8)
Anxiety with inhibition	27.6	39.3	22.9	30.3	29.4 (23.2, 35.7)
1 year follow-up					
Boys	(n= 15)	(n= 30)	(n= 54)	(n= 34)	(N= 133)
Generalized anxiety	53.3	30.0	40.7	17.6	33.8 (25.7, 42.0)
Anxiety with inhibition	40.0	36.7	24.1	11.8	25.6 (18.1, 33.1)
Girls	(n= 18)	(n= 45)	(n= 56)	(n= 46)	(N= 165)
Generalized anxiety	27.8	20.0	30.3	32.6	27.9 (21.0, 34.8)
Anxiety with inhibition	38.9	20.0	25.0	15.2	22.4 (16.0, 28.9)
2 year follow-up					
Boys	(n= 9)	(n= 54)	(n= 51)	(n= 69)	(N= 183)
Generalized anxiety	11.1	22.6	34.7	17.7	23.2 (16.9, 29.4)
Anxiety with inhibition	11.1	28.3	14.3	10.6	16.9 (11.4, 22.5)
Girls	(n= 38)	(n= 60)	(n= 92)	(n= 81)	(N= 271)
Generalized anxiety	0.0	15.5	32.3	21.2	20.7 (15.8, 25.6)
Anxiety with inhibition	0.0	17.2	16.7	11.2	12.8 (8.7, 16.8)

Table 2. Prevalence of anxiety syndromes at the initial assessment and follow-ups

Nearly half of the observations on children and adolescents with any screening anxiety syndrome are reported as having considerable impairment and with strong longitudinal morbid risk in terms of the odds ratio. Another one fifth of the observations on children and adolescents with any screening anxiety syndrome shows moderate impairment as well as moderate longitudinal morbid risk. Notably, one quarter of the observations on children and adolescents presenting anxiety with inhibition also shows some impairment with moderate longitudinal morbid risk (Table 4).

Antecedents	Generalized anxiety	P	Anxiety with inhibition	P
	OR (95% CI)		OR (95% CI)	
Anxiety	9.4 (2.8, 31.8)	.000	8.7 (2.3, 33.2)	.001
Depression	3.9 (1.1, 14.2)	.040	2.6 (0.8, 7.9)	.093
Substance abuse	1.0 (0.2, 5.7)	.979	1.9 (0.3, 10.4)	.464
Anxiety depression	6.5 (2.4, 17.8)	.000	4.4 (1.6, 11.9)	.004
Anxiety, depression	21.7 (6.7, 70.6)	.000	5.2 (1.9, 14.5)	.002
Substance abuse				

No.obs: 1003; No. gps.433; Wald chi2=33.03; gl=5; p= 0.0000; Wald chi2=17.18; gl=5; p= 0.0042

Table 3. Specific parental antecedents and anxiety syndromes in the offspring

BIS total score	Generalized anxiety	OR (95% CI)	P	Anxiety with inhibition	OR (95% CI)	P
	%			%		
0-4	13.9	1.0	.	10.4	1.0	
5-8	18.1	2.0 (0.8, 4.9)	.149	25.9	4.7 (1.7, 12.8)	.003
9-12	22.5	5.5 (2.0, 14.6)	.001	17.8	5.0 (1.6, 15.2)	.005
13-48	45.5	19.1 (6.6, 55.1)	.000	45.9	20.6 (6.5, 65.9)	.000

No.obs: 741; No. gps.540; Wald chi2=34.75; gl=3; p= 0.0000; Wald chi2=26.97; gl=3; p= 0.0000

Table 4. BIS impairment total score and anxiety syndromes

Further analyses on the different sub-scales of the BIS show that interpersonal relationships are significantly impaired in all of the observations of anxious children and adolescents as compared to those observed in the first quartile (Table 5).

Interpersonal Sub-scale score	Generalized anxiety	OR (95% CI)	P	Anxiety with inhibition	OR (95% CI)	P
	%			%		
0	11.8	1.0	.	12.6	1.0	
1-2	32.1	4.3 (1.7, 10.7)	.002	37.8	4.5 (1.7, 11.6)	.002
3	12.8	11.7 (3.4, 40.5)	.000	12.6	10.6 (2.7, 41.2)	.001
4-20	43.3	17.2 (6.1, 48.7)	.000	37.0	10.0 (3.3, 30.4)	.000

No.obs: 741; No. gps.540; Wald chi2=31.0; gl=3; p= 0.0000; Wald chi2=18.00; gl=3; p= 0.0004

Table 5. BIS interpersonal relationships sub-scale and anxiety syndromes

Seventy percent of the observations on anxious children and adolescents show moderate to severe impairment on the school/work sub-scale of the BIS as compared to those observed in the first quartile (Table 6).

School/work Sub-scale score	Generalized anxiety %		OR (95% CI)	P	Anxiety with inhibition %		P
0-1	20.3		1.0		17.8	1.0	
2	9.1		0.8 (0.3, 2.3)	.725	10.4	1.0 (0.3, 2.8)	.992
3-5	34.2		3.7 (1.6, 8.4)	.002	34.8	3.4 (1.4, 8.2)	.006
6-21	36.4		14.7 (5.5, 39.4)	.000	37.0	14.7 (4.9, 43.9)	.000

No.obs: 741; No. gps.540; Wald chi2=32.26;gl=3; p= 0.0000;Wald chi2=25.17;gl=3; p= 0.0000

Table 6. BIS work/school performance sub-scale and anxiety syndromes

Finally, on the self attitudes sub-scale, 85% of all the observations on children and adolescents presenting anxiety with inhibition show different degrees of impairment that are significantly different from those in the first quartile, as compared to 60% of the observations on children and adolescents with generalized anxiety syndrome (Table 7).

Self-attitudes Sub-scale score	Generalized anxiety %		OR (95% CI)	P	Anxiety with inhibition %		P
0-1	22.5		1.0		14.1	1.0	
2-3	20.3		1.0 (0.4, 2.4)	.978	25.2	3.5 (1.4, 9.2)	.010
4-5	22.5		3.7 (1.3, 10.4)	.012	28.9	7.5 (2.7, 21.1)	.000
6-18	34.7		8.1 (3.0, 22.0)	.000	31.8	8.5 (3.1, 23.6)	.000

No.obs: 741; No. gps.540; Wald chi2=21.31;gl=3; p= 0.0001;Wald chi2=19.77;gl=3; p= 0.0002

Table 7. BIS self-attitudes sub-scale and anxiety syndromes

2.4.3. Does the exposure to a more outrageous family environment is significantly associated with each anxiety syndrome? If so, is it different for each anxiety disorder?

Bivariate analyses between anxiety syndromes and the score on the style of solving problems at home scale (SSPHS) do not show a significant association with either anxiety syndrome in children and adolescents; however, a higher score on the SSPHS was close to be significantly associated with generalized anxiety (Table 8).

SSPHS score	Generalized anxiety %	OR (95% CI)	P	Anxiety with inhibition %		P
				inhibition	OR (95% CI)	
7-8	27.5	1.0		26.4	1.0	
9-11	25.0	1.2 (0.3, 6.1)	.784	24.0	1.2 (0.4, 3.3)	.790
12-15	13.7	0.2 (0.05, 1.2)	.089	16.3	0.7 (0.2, 2.1)	.526
16-28	33.8	3.4 (0.9, 11.9)	.060	33.3	2.3 (0.8, 6.6)	.129

No.obs: 794; No. gps.321; Wald chi2=12.75;gl=3; p= 0.0052;Wald chi2=4.42;gl=3; p= 0.22

Table 8. More outrageous family environment and anxiety syndromes

Having witnessed physical violence at home was found significantly associated with generalized anxiety syndrome in children and adolescents, OR= 2.6. (95% CI: 1.2, 5.9), but not for anxiety with inhibition, OR= 1.3 (95% CI: 0.6, 2.6).

2.4.4. Does the exposure to a parental's less positive reinforcement rearing practice is significantly associated with each anxiety syndrome? If so, is it different for each anxiety disorder?

Bivariate analyses show that a higher score on parental's less positive reinforcement rearing practice is only associated with observations on children and adolescents with generalized anxiety as compared to those in the first quartile (Table 9).

Less positive reinforcement sub-scale score	Generalized anxiety %	OR (95% CI)	P	Anxiety with inhibition %		P
				inhibition	OR (95% CI)	
0-17	25.7	1.0		29.1	1.0	
18-23	17.2	0.7 (0.3, 2.0)	.507	21.2	0.7 (0.3, 1.7)	.490
24-28	25.6	2.4 (0.8, 6.7)	.103	17.3	0.7 (0.3, 1.8)	.463
29-51	31.5	2.9 (1.1, 7.9)	.033	32.4	1.6 (0.7, 3.8)	.244

No.obs: 1088; No. gps.444; Wald chi2=9.71;gl=3; p= 0.0212;Wald chi2=4.27;gl=3; p= 0.2336

Table 9. Less positive reinforcement practices and anxiety syndromes

2.4.5. Does the exposure to a parental's more negative reinforcement rearing practice is significantly associated with each anxiety syndrome? If so, is it different for each anxiety disorder?

Bivariate analyses show that exposure to a parental's higher negative reinforcement is significantly associated with roughly one third of the observations on children and adolescents

with either anxiety syndromes. However, the strength of the association is higher on the offspring with general anxiety (Table 10).

Sub-scale score	Generalized anxiety %	Negative reinforcement		Anxiety with inhibition %	
		OR (95% CI)	P	OR (95% CI)	P
1-5	25.3	1.0		23.5	1.0
6-8	14.2	0.4 (0.2, 1.2)	.112	18.4	0.9 (0.4, 2.4)
9-12	22.0	1.5 (0.5, 4.3)	.442	24.6	1.8 (0.7, 4.4)
13-37	38.5	5.6 (2.2, 14.3)	.000	33.5	2.8 (1.2, 6.8)

No.obs: 1088; No. gps:444; Wald chi2=25.41;gl=3; p= 0.0000;Wald chi2=7.84;gl=3; p= 0.0494

Table 10. High negative reinforcement practices and anxiety syndromes

Multivariable analysis using the random effects logistic regression shows that for both anxiety syndromes in children and adolescents parental psychiatric antecedents and a higher score on the BIS are the only two predictive variables significantly associated with the outcome. The contribution of parental psychiatric antecedents in terms of the odds ratio is considerably higher for generalized anxiety than for anxiety with inhibition, and impairment is higher in this latter syndrome than in generalized anxiety (Table 11).

	Generalized anxiety	P	Anxiety with inhibition	P
No. of Familial antecedents	4.7 (1.8, 11.9)	.001	1.9 (1.1, 3.4)	.024
Less positive reinforcement	1.3 (0.7, 2.4)	.365	0.7 (0.5, 1.2)	.177
Higher negative reinforcement	1.2 (0.6, 2.2)	.626	1.3 (0.8, 2.2)	.311
Conflict resolution	1.4 (0.8, 2.6)	.248	1.0 (0.6, 1.6)	.980
Witnessed aggression	0.6 (0.1, 2.5)	.455	0.8 (0.2, 2.6)	.662
Impairment	1.9 (1.2, 3.3)	.011	2.5 (1.4, 4.2)	.001
Sex female	0.7 (0.2, 3.0)	.684	1.1 (0.4, 3.4)	.835
Age	1.1 (0.9, 1.3)	.264	0.9 (0.8, 1.1)	.315

No.obs: 454; No. gps:307; Wald chi2=17.90;gl=8; p= 0.0220;Wald chi2=18.32;gl=7; p= 0.0189

Table 11. Predictor variables and anxiety syndromes

2.5. Discussion

This study has shown that variables included for the surveillance of mental health problems in children and adolescents at a primary care setting, probed to be useful and complementary for the study of anxiety syndromes as defined in the CBTD. Furthermore, results are consistent with findings reported in the literature on child's anxiety disorders as previously reviewed, although none to our knowledge have attempted to collect them as a whole in a primary care setting and evaluate their risk contribution for anxiety disorders in children and adolescents.

Results obtained on the association between specific parental's psychiatric antecedents and the two anxiety syndromes replicated our previous findings in general population (Caraveo-Anduaga, 2011) in that anxiety parental's psychiatric antecedents either alone or comorbid with depression and substance abuse are significantly associated with the development of anxiety syndromes in their offspring.

The odds ratios in the present study are higher than most of the crude odds ratios found on the general population study. For example, the strength of the association between parental's antecedents of anxiety-only and general anxiety syndrome in the offspring was OR= 5.7 (95% CI: 2.1, 15.9) in the general population, while in the present study is OR=9.4 (2.8, 31.8). An explanation for such differences is that regression coefficients calculated with logistic GEE analysis, as in the general population study, always will be lower than the coefficients calculated with a logistic random coefficient analysis as in the present study (Twisk, 2003).

One currently key issue is the extent to which diagnostic thresholds defining mental disorders represent unique entities that lead to functional impairment (Rapee et al., 2012). Results showed that, as expected, higher scores on the BIS were significantly associated with CBTD's anxiety screening syndromes. For most observations on children and adolescents with the generalized anxiety syndrome, 68%, significant risk impairment was found, mainly on interpersonal relationships and work/school performance. Also, for 90% of the observations on children and adolescents reporting anxiety with inhibition, significant risk impairment is associated, and for this syndrome mainly on interpersonal relationships and self-attitudes. These findings are consistent with other reports in the literature, as previously reviewed (see 2.1.2) and contribution of this study is to have documented its presence and relevance in a primary care setting.

Moreover, it is important to highlight that in the present study only frequency of each symptom on the CBTD determined its rating for presence and persistence, so that impairment measurement was obtained irrespective of symptoms and syndromes. The significant association between the measurement of functional impairment and the CBTD's screening anxiety syndromes not only enhance the accuracy and usefulness of these later, but also, impairments identified with the BIS, may become targets for specific interventions and eventually used as outcome indicators as signaled by Ezpeleta et al. (2006).

The exposure to a more outrageous family environment as evaluated by the SSPHS was not significantly associated with any anxiety syndrome in the offspring. However, having witnessed aggression at home was found associated only with generalized anxiety in children

and adolescents. As reviewed, exposure to violence has been found as an independent predictor of different problems in boys as compared with girls (Yates et al., 2003; Moss, 2003). Further analysis is needed to bring more light about this issue.

Roughly, one third of the observations on children and adolescents reporting any screening anxiety syndrome have been exposed to more adverse child-rearing and parental practices, as measured by the two sub-scales of the PPI. A less positive reinforcement rearing practice seems to be a risk only for generalized anxiety syndrome, while higher negative reinforcement is for both anxiety syndromes; however, the strength of the association in terms of the odds ratio is higher for children and adolescents with generalized anxiety. Thus, generalized anxiety syndrome in children and adolescents is associated with more adverse child-rearing and parental practices than children and adolescents presenting anxiety with inhibition. As discussed for impairment, results from the PPI sub-scales not only showed differences in their association with the two screening anxiety syndromes, but also the information is important for planning interventions.

Finally, among the variables included in the study, it is important to distinguish nonmodifiable risk factors from those that could be modifiable (Opler et al., 2010). Results evaluating the morbid risk of all independent variables on anxiety showed that familial psychiatric antecedent, mainly anxiety, is the major nonmodifiable risk factor for both anxiety syndromes, although slightly higher for generalized anxiety than for anxiety with inhibition syndrome. Impairment, which is the second major contributor, is actually a consequence of the psychopathology, so it seems that once an anxiety syndrome is detected, efforts should be directed toward the other modifiable risk factors such as rearing and parenting practices in order to prevent further impairment; diminishes suffering and modify maladjustment.

3. Conclusion

The present report has confirmed that anxiety disorders in children and adolescents attending a primary care center in Mexico City are frequent, persistent and represent a great part of the unmet treatment needs of children's mental health. In order to tackle this problem and enhance the role of primary care in the preventive actions that are needed, results from this pilot surveillance program on child's mental health have developed and adapted simple and efficient tools that identified child's core areas of difficulty associated with the two screening anxiety syndromes. Future work should be focused on acceptable and relatively simple interventions that, as part of a step-care strategy, could modify risk factors such as rearing and parenting practices, evaluating the impact on impairment measures.

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