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Family context and child mental health problems in the Family Health Program

ABSTRACT

OBJECTIVE: To assess the association between variables in the family context and the risk for emotional/behavioral problems in children enrolled in a Family Health Program.

METHODS: A cross-sectional design study was conducted with 100 children aged 6 to 12 years old and their families, especially their biological mothers (82%). All subjects were enrolled in center of the Family Health Program in the city of Ribeirão Preto, Southern Brazil, in 2001. Emotional/behavioral problems of the child, in levels considered as at risk for the development of disorders, were identified by means of the Strengths and Difficulties Questionnaire. Regarding conditions in the family context, the following variables were evaluated: socioeconomic level, adverse events, maternal stress, maternal depressive symptoms, organization, and structure of family environment. Data analysis was performed through univariate and multivariate logistic regression.

RESULTS: Maternal stress was associated with general mental health problems in the child (OR=2.2), while a daily routine with an organized timetable and greater range of activities to fill up their free time were associated with the absence of these problems (1/OR 1.3 and 1.9, respectively). Maternal stress was also a risk factor for anxiety/depression symptoms (OR=1.6). Regarding hyperactivity, financial instability was a risk factor (OR=2.1), and all indicators of environmental stability were protective variables (1/ OR between 1.2 and 1.6).

CONCLUSIONS: Information about family context indicators associated with mental health problems in schoolchildren may subsidize actions of the Family Health Program teams for the child and his/her family; the results indicate a possible employment of the Strengths and Difficulties Questionnaire by the teams, in order to identify early problems in child mental health.

KEYWORDS: Family Health Program. Child psychiatry. Mental health. Family characteristics. Risk factors. Primary health care. Cross-sectional studies.

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INTRODUCTION

Mental Health Problems during childhood may hinder the development in children and are associated with psychosocial disturbances in adult life.[10,18] Epidemiologic studies have reported variable rates of the prevalence of psychiatric disorders in children and adolescents. In the review of the literature[20] the rates found were between 8% and 18%, with a 15.8% average of the global prevalence. In Brazil, different surveys found prevalence rates between 12.7% and 23.3%.[1,6,11,25] The most frequent problems included behavior, attention, and emotional disorders, and hyperactivity.[9]

When studying the conditions that may favor the onset or the intensification

of the most common psychiatric problems in children, common family factors have been found associated with several disturbances.[18] Risk factors for externalized problems encompassing attention deficit hyperactivity disorder and behavioral disorders are: intense marital conflict, social class, family size, paternal criminality, and maternal psychopathology. Protective factors are: families with up to four children, supportive parents, and a suitable amount of limits and rules.[18] Among the risk factors, marital conflicts, family breakup, parental psychiatric history, and family stress, together with intrusive and severe disciplinary practices, are those most significant for attention deficit hyperactivity disorder.[5] For behavioral disorders, low social status is one of the strongest contextual factors.[7] Emotional disorders have been associated to factors such as hostile environment, adverse life events, and having a parent with disorder.[18,24]

Underlying mechanisms for these associations are not well known. It is known that there could be genetic, environmental, or both causes.[18,24] Whatever mechanisms are involved, an unstable, uncontrolled, or chaotic family environment, all are acknowledged as being harmful for children's development.[4]

Identifying mental health problems must occur in primary care. Mapping mental health problems among users, together with the conditions associated with these problems is a necessary step to plan actions for population health. Within this context, the Family Health Program (FHP) stresses preventive actions fostering total and continuous health of the individual. Thus, the Program has benefited millions of Brazilians, especially children, regarding physical health since there are indicators demonstrating mortality reduction in this population.*

However, as part of total health care for children, mental health care is still a challenge in every day care. The scarce literature with empirical data in developing countries points out the need for more precise information on the conditions associated with child mental health problems, especially school problems that are referred for most young people sent to public health services.[23] This information may help structuring care services and introducing preventive strategies.[10]

Based on these considerations, the present study aimed at assessing the correlation between variables in the family context and the risk of behavioral/emotional disorders in children enrolled in the Family Health Program.

METHODS

This was a cross-sectional study performed in a center of the Family Health Program started in November, 2001, in the city of Ribeirão Preto, in Southeastern Brazil.

In the beginning of the research, families were being enrolled with 616 families taking part, representing 65% of the area of the center. Among these families, 126 had children between 6 and 12 years old. They were all invited to take part in the investigation. Twenty-one caregivers (21%) did not want to take part, or gave up the program (21%): 11 were not interested in the research; five did not show up in the scheduled interview; a caregiver withdraw her consent when she was informed that, if necessary, the child would be sent to other services in the community rather than to the center of FHP; four considered that their children did not present psychological problems.

Through the information of the community health agent, the main caregiver was identified, defined as the adult responsible for the child and that spend most time with the child.** The main caregiver was invited to the interview through the community health agent during a home visit. During the interview, six instruments were applied. Interviews occurred in the FHP center and exceptionally in the home or work of the caregiver.

The following standardized instruments were applied:

Strengths and Difficulties Questionnaire (SDQ[12]) – an instrument that traces mental health problems in children and adolescents aged 4 to 16. It is made of 25 items divided between five scales: emotional symptoms; conduct problem; hyperactivity/inattention; peer relation problems, and prosocial behavior. The addition of the first four scales generates the total difficulties score, and the cutoff points determine three classifications (normal, borderline, abnormal) for each scale. This instrument has a valid Brazilian version.[7]

Home Environment Resources Scale (HERS[15,16]) – made by 13 representative topics of the resources that the family make available to the child, to support his/her development. The score in each topic is the addition of the points obtained divided by the number of items forming that topic. The instrument presents satisfactory internal consistency (0.84) and discriminates families whose children present different school performance and behavior problems.[16]

Socioeconomic and Cultural Level Scale [22] – provides

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a composed score formed by 14 measures, such as parents' education and occupations, housing, and access to goods.

Adverse Events Scale (AES[15]) – Assess adverse events that may have occurred in the last 12 months or earlier in the child's life. It is made of 36 items.

Adult Stress Symptoms Inventory (ASSI[14]) - Aims at identifying presence of stress symptoms and its stage (alarm, resistance, near-exhaustion, and exhaustion), and the symptoms listed are typical of each stage. Four levels were established according to the stress stage: zero (absence of stress), 1 (alarm), 2 (resistance), 3 (near-exhaustion) and 4 (exhaustion).

Beck Depression Inventory (BDI[3]) – consists of 21 items, including symptoms and attitudes, and the intensity varies from zero to three. Psychometric properties of the Portuguese version of the scale were studied in different samples, and the internal consistency of the scale was high for non-clinical samples (0.81).[13]

The risk was identified by the presence of symptoms above the limit of normal variability. Risk indicators used were the presence of three types of mental health problems in children (emotional problems, conduct problems, hyperactivity/inattention), as well as the total difficulties rates. Abnormal and borderline cases in SDQ scale were considered positive for mental health problems.

Environmental indicators were selected based on the concept of environment stability as a basic condition for healthy development.[4] Environmental conditions were studied in association with the concepts of environmental stability/instability. The four adverse conditions assessed included: financial instability (addition of items from AES "Tough moments financially speaking", "Father or mother job loss" and "Mother started working outside the house"); instability of parental relationship (addition of the items from AES "Conflicts between parents", "Temporary parents' separation", "Parents' divorce", "Father or mother leaving home", "Mother remarrying" and "Litigation between parents"); maternal stress (ASSI stage) and maternal depression symptoms (total score).

Variables related to environmental stability were assessed from three topics of HERS: use of free time (daily leisure opportunities, such as play videogame, read, play on the street, watch TV), daily routine with defined times (wake up, have lunch, take a shower and others), and the organization of time and room for homework (having a set place to make homework, do the homework before

playing, and others). Measure of socioeconomic level was included in this set of variables.

Statistical analysis was conducted, processed in the SPSS 12.01 program, involving preliminarily calculation of percentages and comparisons of gender and age using Student's t-test or Chi-square test. Investigation of association between environmental variables and child's behavior problems was performed using logistic regression models. All indicators were initially assessed in univariate models. The final model of multivariate logistic regression, with simultaneous entry of predictor variables, included only variables with statistical significance in the univariate analysis (p<0.05).* Adjustment of the final multiple model was performed using Hosmer-Lemeshow test.

Data collection started after consent from the Ethical and Research Committee from the School Health Center of Faculdade de Medicina de Ribeirão Preto da Universidade de São Paulo was given. The research was conducted following the ethical standards of the Declaration of Helsinki.

RESULTS

One hundred children with ages ranging from six to 12.8 (mean 9.3±1.9) years old were assessed; 52% were females; 62% went to school from the first to fourth year of elementary school; 58% lived with both biological parents; and 23% lived with their biological mother in different family settings. The main informant was the biological mother (82%), followed by other feminine figures such as the grandmother, aunt, foster mother, cousin, and great grandmother (14%). Education of the informants showed a bimodal distribution: 30% did not finish elementary school, and 33% started or finished university (Table 1). Mean education was 9.3 years old for mothers and 9.2 for fathers. These indexes are above the averages of the city for education in adults, according to the Map of Illiteracy in Brazil.** Regarding socioeconomic level, greater percentage of children (89%) were from social class C (58%) or D (31%). Only 10% belonged to social class B and 1% to social class E. Among informants, 25% presented stress in the near-exhaustion phase, and 28% presented a score higher than 20 at BDI, indicating depression.[13]

Statistical analysis were performed considering the sample as a whole, once the preliminary comparison analysis (Student's t-test and Chi-square test) indicated that there were no significant differences between genders and among the different age groups (6-8 and 9-12 years old).

Table 1. Family features (N=100) of children from 6 to 12 years old seen by the Family Health Program. Ribeirão Preto, Southeastern Brazil, 2001.

Variable	%
Informer (main caregiver)	
Relationship with the child	
Biological mother	82
Biological father	2
Grandmother	8
Aunt	2
Other	6
Gender	
Male	4
Female	96
Education	
Illiterate	1
Incomplete elementary education	30
Complete elementary education	15
Incomplete primary education	5
Complete primary education	16
Higher education (years)	
1-3	28
4 or more	5
Adults living in the house	
Biological parents	58
Biological mother and stepfather	7
Biological mother and other adults	12
Just the biological mother	11
Biological father and other adults	5
Foster parents	2
Other	5

Table 2. Mental health problems in children from 6 to 12 years old enrolled in the Family Health Program according to the Strengths and Difficulties Questionnaire (N=100). Ribeirão Preto, Southeastern Brazil, 2001.

Mental health problem	N
Anxiety and/or depression	
Abnormal	27
Borderline	12
Normal	61
Conduct problems	
Abnormal	25
Borderline	9
Normal	66
Attention deficit/hyperactivity	
Abnormal	26
Borderline	9
Normal	65
Total of difficulties	
Abnormal	19
Borderline	12
Normal	69

From the 100 children assessed, 19 were abnormal, and 12 were borderline at SDQ, with a total of 31 children at risk condition. Emotional symptoms were more frequent (39%), followed by hyperactivity/inattention (35%) and conduct problems (34%) (Table 2).

According to the univariate logistic regression, presence of mental health problems was usually associated with financial instability (OR=1.78), and maternal stress (OR=1.7), presenting, respectively, emotional symptoms (OR=1.9) and hyperactivity/inattention (OR=2,3) and emotional symptoms (OR=1.7). Probability for the child to present mental health problems was lower when the family offered a greater range of activities to fill up his/her free time (1/OR=1.7), a daily routine with definite times (1/OR=1.3), and definite time and room to make homework (1/OR=1,8). Children with greater range of activities in their free time presented less emotional symptoms (1/OR=1.3) and less hype-

ractivity/inattention problems (1/OR=1.6). Children whose family had a daily routine with definite times and a structure of time and room to make their homework presented less conduct problems (OR values, respectively, 1.2 and 1.7), and hyperactivity (1.3 and 2.1) (Table 3).

In the multivariate logistic regression analysis only those variables which presented significant result in the univariate analysis were included (Table 4). Hosmer-Lemeshow test provided non-significant Chi-square values for the four regressions, thus indicating a good adjustment of the final multiple model. Maternal stress was associated with general mental health problem (OR=2.2), whereas greater range of activities for the free time and routine with definite time were associated with absence of problems (1/OR=1.9 and 1.3, respectively). Maternal stress was the only family variable that remained associated with emotional symptoms in the presence of other indicators of environment stability/instability (OR=1.6). Multivariate model confirmed the associations detected in the univariate analysis regarding hyperactivity problems, but it did not confirm the association regarding conduct problem. Financial instability remained as the variable positively associated with hyperactivity (OR=2.1) and all stability indicators remained as variables negatively associated with this type of problem (1/OR between 1.2 and 1.6) None of the family context variables demonstrated association with conduct problems in the multivariate logistic regression model.

Table 3. Adverse environmental conditions associated with mental health problems in children from 6 to 12 years old seen be the Family Health Program, according to unvaried logistic regression (N = 100). Ribeirão Preto, Southeastern Brazil, 2001.

Variable	Anxiety/ Depression	Conduct Problems	Attention Deficit/ Hyperactivity	Total difficulties
	OR (IC 95%)	OR (IC 95%)	OR (IC 95%)	OR (IC 95%)
Financial Instability	1.9*(1.1; 3.3)	NS	2.3**(1.3; 4)	1.78*(1.05; 3.04)
Adversity in parental relationships	NS	NS	NS	NS
Maternal depression Symptoms	NS	NS	NS	1.03*(1; 1.1)
Maternal stress phase	1.7*(1.2; 2.5)	NS	NS	1.7**(1.1; 2.4)
	1/OR (IC 95%)	1/OR (IC 95%)	1/OR (IC 95%)	1/OR (IC 95%)
Socioeconomic level	NS	NS	NS	NS
Use of free time	1.3*(1.1; 1.7)	NS	1.6**(1.2; 2.2)	1.7**(1.2; 2.4)
Daily routines with definite times	NS	1.2*(1; 1.3)	1.3**(1.1; 1.5)	1.3**(1.1; 1.5)
Arrangement for homework	NS	1.7*(1; 2.9)	2.1**(1.2; 3.7)	1.8*(1.1; 3.1)

*$p \leq 0.05$;
**$p \leq 0,01$

Table 4. Final model for multivariate logistic regression of environmental variables associated with mental health problems in children from 6 to 12 years old (N=100) referred to the Family Health Program. Ribeirão Preto, Southeastern Brazil, 2001.

Variable	Anxiety/ Depression	Conduct problems	Attention deficit/ Hyperactivity	Total difficulties
Financial Instability	NS	EX	2.1*(1.1; 3.9)	NS
Adversity in parents relationship	EX	EX	EX	EX
Maternal depression symptoms	EX	EX	EX	NS
Maternal stress phase	1.6*(1.1 ; 2.3)	EX	EX	2.2*(1.1; 4.2)
Socioeconomic level	EX	EX	EX	EX
Use of free time	NS	EX	1.6**(1.1; 2.3)	1.9**(1.2; 3)
Daily routines with definite schedule	EX	1.1*(0.7 ; 1.25)	1.3**(1.1; 1.5)	1.3**(1.1; 1.6)
Homework arrangement	EX	NS	1.2*(1; 1.5)	NS

EX = variable excluded from the final model; NS = nonsignificant variable in the final model.
*$p \leq 0.05$;
**$p \leq 0,01$

DISCUSSION

The present study had some limitations. Data on child's behavior was obtained only through one source of information, the mother or the main caregiver. Other informants such as the teacher or the children themselves could have given enlightening information. The teacher provides information on the child's behavior in school, and the child may show symptoms that are underestimated in the adults' evaluation, especially those internalized. Another limitation refers to the use of cross-sectional study that does not allow checking the time sequence of the association among the variables studied.

Two contributions of the study can be indicated. The first was assessing the psychosocial profile of the population studied that is part of an official nationwide health care program. Early identification in schoolchildren at risk for psychosocial disorders may be essential in primary care of child mental problem.

Prevalence rates found were close to those from the study performed in schools from the same city, using also SDQ.[6] Identification of 31% of children at risk for behavioral problems points to the need for introducing a protocol of problem detection at the FHP level. In this sense, the use of tracing instrument (SDQ) by the teams of FHP is suggested. In addition to quick application, this questionnaire has a valid Brazilian version.[10]

The second contribution was identifying environmental factors associated with risk condition for emotional/ behavioral disorders. Multivariate analysis indicated that, apart from conduct problems, different mental health problems are associated with several environmental problems.

Maternal stress was associated with emotional problems in the child, which is in agreement with the studied literature with regards specifically to anxiety.[19] Anxiety in children has been associated with unpredictable and uncontrollable environment, as well as parents' anxiety; the later may reflect genetic or environmental influence.[25] Results found suggest that association between children's anxiety and environmental variables are connected with this predictability condition, modulated by maternal stress. When maternal stress is present, the positive association between anxiety and financial instability (an unpredictability factor) is no longer significant, nor the negative association between anxiety and the varied use of the free time (set of regular activities, therefore predictable).

In disagreement with the literature,[7,18] in the present study sample conduct problems were not associated with economical disadvantage. On the other hand, a negative association with indicators of daily schedule organization was detected. Measure applied to assess daily routine is an indicator of family life organization, but, especially, the child's life; six out of the eight items forming the measure focus on the child's daily life: time to go to bed, to get up in the morning, to take a shower, to make homework, to watch TV, and to play. Organizing the time this way demands adult guidance. Previous studies[7] suggest that, as children approach adolescence, parents' surveillance becomes a factor associated with conduct disorders. This association may be understood in several ways. On one hand, one may suppose that a child with daily routines is more capable of internalizing rules and respecting limits. On another hand, the child's role in interactions cannot be forgotten: it is possible that, with time, the parents of children at risk for conduct disorders learn to supervise less their children to avoid conflicts.[7]

For attention deficit/hyperactivity symptoms, financial instability and daily life organization appear as associated condition. This setting of environmental variables linked with hyperactivity enables several assumptions to be made.

A first possibility is the influence of environment on the child's behavior. Financial instability has been associated with accumulation of stressors, a condition that increases the probability of occurring behavior problems.[18] Prospective studies found association between hyperactivity symptoms and indicators of social disadvantage and family instability, including economical instability.[2,5,8] However, the organization of daily life, expressed by a greater structuring of the environment, may have a positive effect on behavior, so much so that it has been recommended as an adjuvant in the treatment of children with diagnostic of ADHD.[21]

An alternative explanation for these results considers the instability potential of the child's behavior on the environment. For example, parents of children with ADHD, when compared to parents of children without psychiatric diagnosis, present greater stress connected with managing the children and greater disagreement between couples on educational practices.[5] In the present study, the hypothesis of the children's influence on the environment would apply to the association between hyperactivity symptoms and environmental stability indicators, such as a routine with definite timetable, and homework arrangements. This is because the typical problems with self-regulation presented by the hyperactive children make it difficult for them to adjust to time, rules, and routines, even though the parents may be able to set these limits to other children.

As of the results on environmental variables, we found that some expected associations based on the literature were not confirmed, especially those related to economic disadvantage and family disagreement, risk factors that are common to several psychiatric disorders in children.[18] Negative results may be due to sensibility factors of the measures used, and the sample size. This last factor may have contributed to the negative results regarding the socioeconomic indicator, due to the characteristics of the sample (educational level higher than the average of the city, social class C overrepresented).

Results confirmed the need for investments on the children mental health area, since they proved that mental health problems in children and adolescents are common and have been underidentified. The use of tracing instruments by the teams of FHP may be promising once they, in addition to investigating symptoms, assess their impacts on children, their family and school lives, through a fast and easy application. Knowledge on the impact of disorders in children's lives is essential, since it enables identifying the disorder that demands intervention.

Concerning fostering a healthy development, the FHP teams may be trained to act effectively with the families regarding psychosocial development. A concrete example is the aspects on organizing the child's routine that have been indicated by this study as a condition clearly associated with absence of risk, although we have not assessed cause/effect relations. An organized family environment has been considered as a protective factor for children and adolescents exposed to psychosocial risk conditions.[17] These resources of the family context may be increased through the actions of FHP team.

The study also highlights the importance of active search for information on life conditions and mental health of the population in the working area of FHP, to foster actions that meet the needs of this population. In the sample studied, a high number of children presented internalizing symptoms, had caregivers

with stress and depression symptoms, and there was a significant association between maternal stress and mental health problem. This information indicates these families' need for support to develop strategies to control stress associated with parenting functions and other family functions.

Introducing services to prevent child's mental health disorders, in addition to alleviating the suffering of the child and his/her relatives, reduces the load of specialized services, using a simpler and yet effective care, such as the one proposed by FHP.

The present exploratory study opens perspectives to new investigations in the child mental health field, especially concerning FHP, where triggering symptoms may be identified aiming at prevention and treatment when necessary. The high prevalence rates found must be explained, once the behavioral symptoms in children may be transitory manifestations. Prospective studies can check the persistence of symptoms, as well as the conditions associated with their increase or decrease over time. The research may be extended to other centers of FHP, aiming at assessing how general the associations found are. With the teams of FHP, punctual interventions may be assessed regarding their effectiveness and acceptability by the users. One example of that would be the routine use of one instrument to trace child's mental health problem and a protocol to follow the families of children at risk. Training of teams for this job is also open to investigation. Many issues in this area are worth investigating, using new studies encompassing different regions in Brazil, with greater samples, and different informants.

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