

Mental health problems in children from Middle School attending a public
and private institution in Ecuador

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Abstract

Objective: To determine the prevalence of mental health problems in children attending Middle School from a public and private institution, located in a sub-urban area of Quito- Ecuador.

Design: Cross sectional survey.

Participants: 380 Ecuadorian students attending Middle School from a public and private institution who belong to different socio-economic status.

Main outcome measures: To determine and to compare the prevalence of mental health problems in the studied population.

Method: Cross sectional survey applying the the Strengths and Difficulties Questionnaire (SDQ). Size sample: n=380. The SDQ algorithm generated specific predictions for conduct disorders, hyperactivity disorders and emotional disorders as well as an overall prediction for any mental health problem.

Results: The results evidenced a higher risk to present any mental Health problem in students from the public school when compared with children attending private school OR = 2.85 (1.62 - 5.04). A higher risk was also evidenced for emotional disorders OR 7.97 (2.87 - 23.89), behavioral disorders OR 2.82 (1.36 - 5.92) and hyperactivity disorders OR 2.70 (1.08 - 6.91). Children from the public school also presented a higher risk of impact than children from the private school OR= 3.10 (1.77 - 5.47). The overall prevalence of mental health problems was 17.49%.

Conclusions: The prevalence of psychiatric disorders among the studied population is similar children to the prevalence reported by the literature in Latin-American countries. Children belonging to low socio-economic status present a higher risk of any mental health problem when compared to children from high socio-economic status. Further research needs to focus on children`s mental health problems nationwide, specially in the underprivileged population.

Key words: prevalence; mental; health; disorders; middle-school

1. Introduction

“Mental health is the core of a balanced development through life, playing an important role in interpersonal relationships, family life, and social integration. In fact, mental health is much more than the mere absence of mental illness, it is an indivisible part of health and the foundation for the well-being and effective functioning of individuals”³

The prevalence of child psychiatric disorders varies widely ranging between 10-20% (17.9% in Western Australia,¹² 9.4% in South India,¹³ 12.7% in Brasil,⁸ 11.3% in England, Asia and Europe 15-17.5%³), however in the developing world, where children and adolescents make up a higher proportion of the population, the prevalence may be higher.¹ (The Puerto Rico Child Psychiatry Epidemiologic Study reported a 17.9 % prevalence, while Colombia reported a 29%³)

The Pan-American Health Organization stated in the *World Health Report 2001* that in 1990, “114 million people suffered from a mental disorder ; later in 1998 it represented 11.5 % of the burden of disease worldwide and it is said that this number will increase to 176 million in 2010”.³ The incidence of this disorder is to be influenced by gender, age and a myriad of social and demographic factors as well as by the biology (genetics, chemical imbalances in the body, and damage to the central nervous system), environment (exposure to violence, extreme stress, and the loss of an important person), or a combination of the two.⁷ Researchers report that young children have mental, emotional, and behavioral problems and that 1 in 5 children has a mental disorder that can be detected and treated.⁷ Regarding anxiety disorders, 20% of children and adolescents in Latin America are affected by mental health disorders.

There has being an effort to investigate, enhance, update and develop the implementation of new and more expanded health plans, new policies, taking in count the development of molecular science and neuroscience, new diagnostic methods, new psychopharmacological treatments and methods of prevention of the disease by primary care.³

The most common disorders in children are *anxiety, depression, conduct disorder, learning disorders, and attention deficit hyperactivity disorder (ADHD)*. Experts say that the 10 % of children with mild disorders display symptoms that are not immediately obvious and, therefore, often go undetected.⁵

Anxiety disorders (panic disorder, post-traumatic stress disorder, obsessive-compulsive disorder) are the most common group of mental disorder among children, affecting about 13 % of 9- to 17-year-olds.⁷

Children with *attention disorders* (3-5%), such as *ADHD*, often have difficulty concentrating in school, become impulsive and distractible, and have problems getting along with other people.⁵

According to the National Institute of Mental Health (NIMH), more than 6% of children suffer with affective disorders and 5 % of them have major depressive disorder.⁵

Bipolar disorder, a combination of changing manic and depressive episodes, usually surfaces around adolescence and has a prevalence of 1%.⁵

Conduct disorder is a major health and social problem. It is the most common psychiatric disorder in childhood, with a prevalence of around 5% across the world.^{4,8}

Conduct disorder is the most frequently diagnosed childhood disorder in outpatient and inpatient mental health facilities. It is estimated that 6 % of all children have some form of conduct disorder which is far more common in boys than in girls.² Many of the underlying causes of childhood behavioral problems, including family violence and abuse, can be prevented or successfully managed. The diagnosis is given to children who display persistent severe antisocial behavior such as tantrums, verbal and physical aggression, lying, stealing, and violations of other people's rights.⁸ It is important to look beyond obvious negative behaviors to identify underlying biological, emotional, or social vulnerabilities that might be present and treatable.⁶ A lot of children with conduct disorders may suffer from myriad biological, psychological, and social vulnerabilities.²

Questionnaire measures

The Strengths and Difficulties Questionnaire (SDQ) is a brief screening questionnaire that asks about 25 attributes, some positive and some negative. The 25 items are divided between 5 scales of 5 items each, generating scores for conduct problems, hyperactivity, emotional symptoms, peer problems and prosocial behavior.⁹ It is utilized as a potential means for improving the detection of child psychiatric disorders in the community. The SDQ is a questionnaire that can be administered to the parents and teachers of 4 to 16-year-olds and to 11 to 16-year-olds themselves.⁹ The screening efficiency of multi-informant of SDQs, report a sensitivity of 63.3% and a specificity of 94.6% with a positive predictive value of 52.7% and a negative predictive value of 96.4%.¹¹

Computerized algorithms exist for predicting psychiatric disorder by bringing together information on symptoms and impact from SDQs completed by multiple informants.¹⁰ The SDQs administered to multiple informants can identify around 2/3 of children and adolescents with psychiatric disorders in the community.¹¹

The SDQ algorithm generates specific predictions for 'conduct disorders', 'hyperactivity disorders' and 'emotional disorders' as well as an overall prediction for 'any disorder'.⁹ The algorithm makes separate predictions for three groups of disorders: conduct / oppositional disorders, hyperactivity / inattention disorders, and anxiety / depressive disorders. Each is divided in three categories: unlikely, possible or probable. Predictions of these three groups of disorders are combined to generate an overall prediction about the presence or absence of any psychiatric disorder.⁹ The algorithm identifies about 4/5 of those with severe psychiatric disorders.¹¹

The SDQ prediction works best when SDQs have been completed by all possible informants, principally by parents and teachers in all instances, and young people themselves from the age of 11 onwards.¹¹ Thus information from parents is much more useful for detecting emotional disorders rather than a self-report data or as a teacher data report. Information from teachers is much more useful for detecting conduct and hyperactivity disorders.¹¹

The sensitivity of the SDQ varies according to the diagnosis; 70 - 90% of sensitivity for individuals with conduct, hyperactivity, depressive and some anxiety disorders, but under 30-50% of sensitivity for individuals with specific phobias, separation anxiety, eating disorders and panic disorder/agoraphobia.¹¹ The greatest SDQ sensitivity for all diagnoses is achieved by parents, teachers and students (PTS) report (64.8%)¹¹

The self reported SQD has being used and validated in mayor study designs. The most important one in Latin-America was realized by Goodman et all in 2001, in Brazil.² The objective was to determine the prevalence of child psychiatric disorder by using the self report version of the strengths and difficulties questionnaire. Three contrasting neighborhoods were taken: a new favela (shanty town), a stable urban community; and a rural village with the aim to identify all 7-14 year olds students. The total sample of 898 participating children comprised 488 from the favela, 346 from the stable urban area, and 64 from the rural area. The SQD was a reliable instrument to determine the prevalence of psychiatric disorder in that sample (10-20%).²

The purpose of this study is to determine the prevalence of mental health problems in children from Middle School from 6 to 8 grade from two educational secondary schools ; a public school and a private school from a sub-urban area of Quito (Cumbaya), from January to December 2007.

Hypotheses

Because of the difference of the sample which are from two different socio-economic and ethnically levels, where environment and customs are important, it is possible to assume that children from the public school might have a higher risk for developing any mental health problem and that the impact of these disorders are significant in their life.

2. Methods

Setting and Participants

Data was collected from 380 Ecuadorian Students (n=380) attending Middle School mostly between the ages of 11-14 years from a public and a private school both located in a sub-urban area of Quito, (Cumbaya) – Ecuador. The total sample (380 students composed by 197 students from a private school and 183 from a public school) was recruited through personal interviews in which children alone provided questionnaire and interview information on 94.4% of the sample obtaining a participation rate of 100 %. There were 15 incomplete questionnaires (5.55%) which were excluded from the analysis of the SQD. In the public school sample, students who were between 15 to 16 years old, were included in the sample and were distributed into the 8th grade. This was made because some students had to repeat at least once an academic level.

The data collected corresponded to children from two different socio-economical stratus.

Research instruments and sampling

The Strengths and Difficulties Questionnaire (SDQ) was applied and permission to use it was granted by Professor Robert Goodman

The questionnaire was taken at the schools under full informed consent of the school-teachers parents and children. All bioethical principles such as autonomy, justice, nonmaleficence and beneficence were respected in order to achieve the best healthcare interests and welfare of all students. Further on, The Ethical Committee of the Universidad San Francisco de Quito approved this investigation.

Measures were obtained applying *The Strengths and Difficulties Questionnaire (SQD)* in test like conditions in the private school. Regarding to the public school the SQD was applied by an interviewer. The survey was voluntary, anonymous and confidential. The names of the schools were kept anonymous.

Exclusion criteria:

- Students aged <11 or >16 years old
- Incomplete questionnaires that could not provide reliable information for analysis.
- Students who refused to fill the SQD

Inclusion criteria:

- Students from Middle School, including repeaters

Outcome measure

The prevalence of mental health problems (any mental health difficulty, behavioral, emotional and hyperactivity); and the impact of any mental health difficulties in the children's life.

Research Design

The research design consisted on a Cross sectional survey, design which permitted us to accomplish our objective

Data analysis.

Data analyses were conducted using the SPSS 12.0 for Windows, Microsoft Excel 2007 and the EPI INFO 6.04 for DOS software.

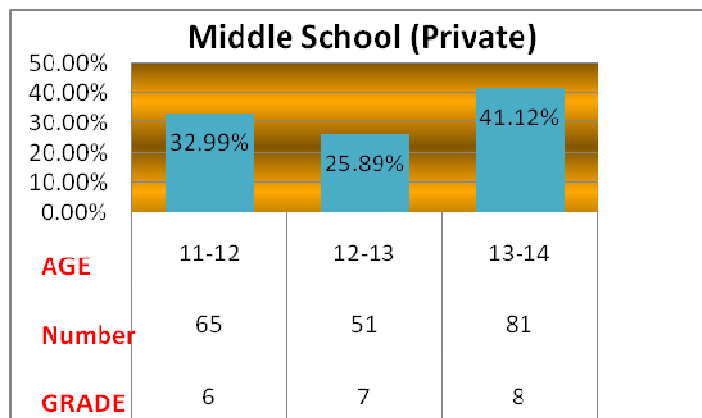
Descriptive statistics were conducted using SPSS 12.0 to obtain percentage distributions and confidence intervals (95 %) based on the data collected.

P values and Odds Ratios were obtained when needed

3. Results

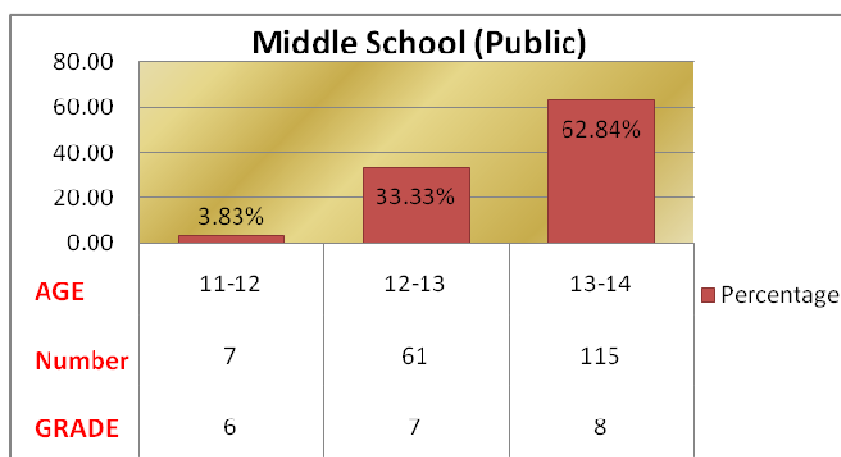
Data were collected from a total of 380 Ecuadorian students attending Middle School (n=380) from a public school (n=183) and a private school (n=197) both located in a sub-urban area of Quito (Cumbayá). Students were evaluated in a cross sectional survey applying the *Strengths and Difficulties Questionnaire (SQD)*. 51.84% of the size sample corresponded to students from a private school while 48.16% attended a public school.

Fig 1. Categorization Groups in Middle School from a private School.



- 41.12 % of students from the private school (n=197) are between the ages of 13 and 14.

Fig 2. Categorization Groups in Middle School from a public School.



- 62.84 % of students from the public school (n=183) are integrated by children from 13 to 16 years old. In this size sample (115 students), in order to evaluate middle-school, students who had to repeat an academic year were included to this age category (13-14 years) and correspond to the 8th grade.
- There are differences in the distributions by grades and by age between the two schools.

Table 1. Number, percentage and P values of children with each disorder from Middle-School from a private and public school (medium risk).

		Any Diagnosis	Emotional	Behavioral	Hyperactivity	N
Private	Total	22	4	12	8	197
	%	11.17	2.03	6.09	4.06	100
Public	Total	32	20	22	19	183
	%	17.49	10.93	12.02	10.38	100
	P values	0.0779	0.0003*	0.0429*	0.0165*	

* P value with statistical significance.

Children from Middle School from the Public School presented significantly a higher prevalence for medium risk of emotional (10.93% vs. 2.03%) ($p = 0.0003$); behavioral (12.02% vs. 6.09%) ($p = 0.0429$); and hyperactivity disorders (10.38% vs. 4.06%) ($p = 0.0165$) than children from the Private School.

Table 2. Number, percentage and P values of children with each disorder from Middle-School from a private and public school (high risk)

		Any Diagnosis	Emotional	Behavioral	Hyperactivity	N
Private	Total	2	1	1	0	197
	%	1.02	0.51	0.51	0	100
Public	Total	21	12	9	0	183
	%	11.48	6.56	4.92	0	100
	P values	0.000019*	0.00118*	0.0181*	n/a	

N/A: Not available. * P value with statistical significance.

Children from Middle School from the Public School presented a significantly higher prevalence for high risk of emotional (6.56% vs. 0.51%) ($p = 0.00118$); behavioral (4.92% vs. 0.51%) ($p=0.0181$) and any disorders (11.48% vs. 1.02%) ($p=0.000019$) than children from the Private School.

Table 3 . *Correlation of Mental Health Disorders within Categorization Groups in Middle School*

Pathology	Any Diagnosis		Emotional		Behavior		Hyperactivity	
	<i>Above average</i>	<i>Average</i>	<i>Above average</i>	<i>Average</i>	<i>Above average</i>	<i>Average</i>	<i>Above average</i>	<i>Average</i>
Public	53	130	32	151	31	152	19	163
Private	24	168	5	188	13	180	8	185
Odds Ratio	2.85 (1.62 - 5.04)		7.97 (2.87 - 23.89)		2.82 (1.36 - 5.92)		2.70 (1.08 - 6.91)	

Above average = medium+ high. *Average* = low. *Odds ratio* =95 % Confidence Interval

The results obtained regarding to Mental Health difficulties in children attending to Middle School by each categorization group (categorized as low, medium or high in each pathology) for each category evidenced a higher risk for any Mental Health disorders in students from the public school OR = 2.85 (1.62 - 5.04) as well for *Emotional disorders* OR 7.97 (2.87 - 23.89), *Behavioral disorders* OR 2.82 (1.36 - 5.92) and *Hyperactivity disorders* OR 2.70 (1.08 - 6.91) when compared to all children from the private school.

Table 4 . Comparison of impact and mental Health difficulties between children of Public and Private schools

		Impact				
		average	slightly high	high	very high	Odds ratio CI 95%
Private	Total	172	16	2	6	
	%	87.31	8.12	1.02	3.05	
Public	Total	127	17	15	23	3.10 (1.77 - 5.47)
	%	69.39	9.29	8.19	12.57	
	P values	0.00002	0.68627	0.00071	0.00047	

CI: Confidence Interval

When the impact of any Mental Health difficulties was compared between children from the public and private school from Middle School , children from the public school presented a higher risk of impact than children from the private school OR= 3.10 (1.77 - 5.47). There is a significant statistical difference in children from Middle School regarding a high and very high impact in mental Health difficulties (P= 0.00071) and (P= 0.00047) respectively.

4. Discussion

This study permitted us to determine the prevalence of mental health problems in children from Middle School from 11 to 14 years old corresponding to 6 to 8 grade from two different secondary schools; a public school and a private school both located in a sub-urban area of Quito (Cumbayá) as well as to assess the percentage of children at medium or high risk for developing mental health disorders such as emotional, behavioral and hyperactivity disorders and the impact of these disorders in the life of the children.

The comparison between a private and a public school from a socio-economic and ethnically heterogeneous sample demonstrated that there is a significantly higher prevalence for developing mental health disorders in children from the public school in comparison to children from the private school. The approximate rate of prevalence of mental disorders in children ranges from 21% in the United States to 12% - 29% in developing countries such as Colombia. (Pan American Health Organization, 2001). In this study, the percentages of children at high risk for mental disorders are 11.48% for any mental health disorders, 6.56% for emotional disorders, and 4.92% for behavioral disorders while the percentages of children for developing a medium risk for mental disorders are 17.49% for any mental health disorders, 10.93% for emotional disorders, 12.02% for behavioral disorders and 10.38% for hyperactivity disorders. As we can see, the prevalence of developing a high risk mental health disorder in students from Middle-School (17.49%) is between the prevalence reported by the literature in Latin-American countries.

These results also evidenced a higher risk for *any Mental Health disorders* in students from the public school when compared to all children from the private school $OR = 2.85 (1.62 - 5.04)$ as well for *Emotional disorders* $OR 7.97 (2.87 - 23.89)$, *Behavioral disorders* $OR 2.82 (1.36 - 5.92)$ and *Hyperactivity disorders* $OR 2.70 (1.08 - 6.91)$. This strongly indicates that the possible key explanatory variable was the disadvantaged socioeconomic status of the children from the public school.

The survey obtained a high response rate (94.4%). However, the total sample (380 students composed by 197 students from a private school and 183 from a public school) was taken only from 2 different schools (a private and a public one), that is why, this sample is not representative at any particular population. This

sample does not represent a community, town, city or country. It just represents two educational institutions. This is by far the most important limitation of our study.

The self reported SQD has being used and validated in mayor study designs. The most important one in Latin-America was realized by Goodman et all in 2001, in Brazil.² The objective was to determine the prevalence of child psychiatric disorder by using the self report version of the strengths and difficulties questionnaire. In this study, in order to evaluate the impact of these disorders in students from Middle-School, the self report version of the strengths and difficulties questionnaire (SQD) was used. The impact of any Mental Health difficulties was compared between children from the public and private school from Middle School, in which children from the public school presented a higher risk of impact than children from the private school OR= 3.10 (1.77 - 5.47). There is a significant statistical difference in children from Middle School regarding a high and very high impact in mental Health difficulties (P= 0.00071) and (P= 0.00047) respectively. This means that impact of mental health disorders in children's life was significant specially for children from the public school when compared to students from the private school.

Children in general and specially children from low social, cultural and economical levels such as the children from the public school, suffer from a lack of early diagnosis, intervention and follow up regarding their mental health. This happens because policies and plans for control of mental health disorders are not well elaborated and implemented in the country. As seen in the literature, 10% of children with mild disorders with non-obvious symptoms go undetected and don't receive any kind of medical attention, that is why integrating mental health care and primary care has become priority in many countries all around the world. The development of new, more efficient policies and treatments regarding mental health problems, better medical evaluation with more prepared professionals trying to identify any pathology as soon as possible and begin an early treatment has become a key stone in mental health disorders treatments.

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