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OF ECONOMICS AND  
POLITICAL SCIENCE ■

## **Use of mental health services by children with mental disorders in two major cities in Brazil**

**LSE Research Online URL for this paper:** <http://eprints.lse.ac.uk/100535/>

Version: Accepted Version

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### **Article:**

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<https://doi.org/10.1176/appi.ps.201800389>

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**Title:** Use of mental health services by children with mental disorders in two major Brazilian cities

## **Abstract**

**Objective:** To describe lifetime mental health service use in children diagnosed with mental disorders in two major cities in Brazil and to identify characteristics associated with unmet needs. **Methods:** The High Risk Cohort Study is a community study conducted in two major Brazilian cities. 2,511 6-12 years old children were assessed and 652 were diagnosed with at least one mental disorder. The current study analysed a subsample of 651 children with complete information on mental health service use. **Results:** 81.0% of the children with mental disorders did not receive mental health treatment in the past. The majority of cases were being treated with psychotherapy and a combination of psychotherapy/medication. Being a mixed-race child was significantly associated with unmet needs when compared to white race. **Conclusions:** The high rate of unmet needs of children with mental disorders should be addressed with strategies to improve access to healthcare.

## **Introduction**

Mental disorders in children and adolescents affect 13% of the population (1) and are the leading cause of years lived with disability in this age group in low, middle and high income countries (2). Even though there is a wide range of evidence-based interventions available to treat various youth mental disorders, lack of policies and resources prevent children from obtaining adequate treatment (3). Approximately half of children with mental disorders do not receive any treatment (4), potentially leading to worsening of symptoms and chronic trajectory.

Evidence of mental health service use among children with mental disorders is essential to identify the current gap in treatment. Such data can provide the basis for future mental health policies and health system changes seeking to bridge this gap. However, there is a scarcity of evidence in Low and Middle Incomes Countries (LMIC),

where 88% of the world's children live. These countries have fewer mental health professionals than would be required to deliver adequate mental health interventions to the population in need (5).

To date, only two studies in Brazil described children and adolescents mental health service use. A longitudinal study conducted in a poor municipality of São Paulo state (N=93) showed that 62.5% of children and adolescents with persistent mental disorders measured by a screening instrument did not receive treatment (6). An epidemiological study conducted in four small cities located in four Brazilian regions (N=1,721) found 80.2% of children and adolescents with mental disorders measured by a diagnostic instrument did not receive treatment (7). Both studies did not evaluate details about treatments, such as modality, duration, specific medications, and providers. With these informations policy makers could optimise distribution of health systems resources. Hence, our study aims to describe lifetime mental health service use in children diagnosed with mental disorders in two major cities in Brazil, to describe characteristics of treatments received, and to identify sociodemographic and clinical characteristics associated with unmet needs.

## **Methods**

Our study is based on a large community sample of 6-12 years old children from Sao Paulo and Porto Alegre schools, Brazil. Among 9,937 screened children from 57 public schools, we recruited 1,500 children using a randomized procedure (958 completed assessment) and 2,371 children using a high-risk prioritization procedure in order to find a higher prevalence of five mental disorders (based on family history of mental disorder and/or present symptoms in one of five domains: attention deficit hyperactivity disorder, anxiety, obsessive-compulsive disorder, psychosis, and learning disorders) to enhance power to identify developmental trajectories (1554 completed assessment). The final sample after these procedures was 2,511 children. Among the total sample, 652 met criteria for diagnosis of at least one mental disorder via the Development and Well-Being Assessment (DAWBA) (8) administered by trained lay interviewers to biological parents. The current study is focused on a subsample of 651 children with complete information on mental disorders and mental health service use. Additional details regarding the sampling procedure and other methodological aspects

can be found elsewhere (9). The study was approved by the Research Ethics Committee of the University of Sao Paulo Medical School and interviews were carried out after written consent of caregivers.

A questionnaire developed specifically for this study administered to caregivers was used to assess mental health service use and treatments (use of medication, psychotherapy, duration of treatment, type of provider and professional). All questions referred to the child's lifetime. We investigated the following: child and family characteristics: child age, gender, and race (white, black, mixed), child school dropout (more than 1 month without going to school), child school retention (repeating a least one academic year of school), child abuse (being beaten or hurt by an adult, being unable to eat or have no clothes to wear, being sexually abused, and being victim of verbal aggression), family enrollment in welfare program (any financial help given by the government), maternal years of schooling, maternal unemployment, maternal psychopathology assessed by the Mini International Psychiatric Interview (MINI) (10). Children with unmet needs were defined as having any mental disorder and no previous mental health service use.

Cross tabulations between use of health services (unmet need vs. met need) and sociodemographic characteristics were used to describe data. Multivariate logistic regression was used to identify correlates of service use. All variables were selected based on theory and empirical evidence from previous studies. A single model with all sample characteristics was conducted and reported with odds ratios and p values. To adjust for the high-risk oversampling procedure we used sampling weights derived from propensity scores based on the probability of the child being selected for high-risk (11). Statistical analyses were conducted using the survey command with sampling weights in STATA 15. We considered the threshold for statistical significance  $p < 0.05$  and provided 95% confidence intervals for parameters.

## **Results**

Among 6 to 12 year old children diagnosed with a mental disorder (N=651), 81.0% (95% CI=76.6%–84.7%) did not receive any mental health treatment in their lifetime. Among those treated, 5.2% (95% CI=2.0%–12.6%) were treated with medication only,

47.6% (95% CI=36.2%–59.2%) with psychotherapy only, and 44.7% (95% CI=35.8%–58.8%) with both medication and psychotherapy. Mean duration of treatment among medication and psychotherapy users was 25.8 (95% CI=17.1–34.4) and 22.7 (95% CI=16.5–29.2) months, respectively. Medication users obtained prescriptions from the public health system (56.7%, 95% CI=40.5%–71.6%), private health system (37.9%, 95% CI=24.0%–54.2%), and both systems (4.9%, 95% CI=1.0%–20.5%). Antidepressants were used by 38.7% (95% CI=24.5%–55.0%), benzodiazepines by 3.9% (95% CI=0.9%–14.5%), stimulants by 36.1% (95% CI=22.3%–52.8%), anticonvulsants by 30.0% (95% CI=17.7%–46.2%), antipsychotic by 28.5% (95% CI=15.0%–47.3%), and other medication classes by 10.4% (95% CI=3.3%–28.6%) of the sample. Children who were treated with psychotherapy obtained treatment from the public health system (63.0%, 95% CI=50.6%–73.9%), private health system (32.2%, 95% CI=21.7%–44.7%), and both types of providers (4.4%, 95% CI=1.5%–11.8%).

### **Table 1**

Table 1 depicts receipt of mental health services among children diagnosed with mental disorders, by child, mother, and family characteristics. The group of mixed race (black/white) children had a higher proportion of unmet needs when compared to white children (87.8 vs. 77.4). The odds of having unmet needs among mixed race children was 2.0 (95% CI=1.0–4.0) higher than among white children ( $p=0.036$ ). The group of children living in Sao Paulo had a higher proportion of unmet needs when compared to children living in Porto Alegre (86.4% vs. 78.2), however, this difference was not statistically significant ( $p=0.056$ ). Other characteristics, such as type of mental disorder, were not significantly associated with unmet needs.

### **Discussion**

Our study showed a high rate (81.0%) of children with mental disorders that did not receive any lifetime mental health treatment. Among those who received treatment, the majority of cases were being treated with psychotherapy and a combination of psychotherapy with medication in the public health system. Antidepressants and

stimulants were the most common medication classes used. Being a mixed-race child was significantly associated with having unmet needs.

These findings should be interpreted in light of limitations. The sample is not representative of the population from the two major cities. Also, the sample was derived through a high-risk sampling procedure designed to identify a subsample of children with increased risk for mental disorders. Nevertheless, all analyses were weighted by a score that adjusts for the oversampling strategy. Also, lifetime treatment receipt is subject to recall bias, as a result our findings could have underestimated the real prevalence of service use. Lastly, other characteristics not assessed in our study could potentially explain differences between met and unmet needs. For instance, stigma is known to play an important role in caregiver mental health treatment seeking behavior (12).

Rates of unmet needs in high-income countries (HIC) are much lower. Data from the World Health Organization World Mental Health Survey Initiative showed treatment gap disparities between countries. In lower-middle-income countries only 13.7% of adults who met criteria for mental disorders received treatment, compared to 22.0% in upper-middle-income countries, and 36.8% in high-income countries (13). The treatment gap is broader for youth compared to other age groups worldwide with service utilization rates ranging from as low as 2.2% to 63.0% (4). Differences between LMIC and HIC may be related to mental health system organization, lack of adequate policies and adequate professional training, as well as implementation gap of existing effective evidence-based treatments (3,4).

We found a very similar rate of unmet needs when compared to Paula's epidemiological study conducted in small Brazilian cities (80.2% vs. 81.0%) (7). On the other hand, our finding was higher than the longitudinal study conducted in the metropolitan area near Sao Paulo city (62.5% vs. 81.0%). However, this study focused on children and adolescents with chronic mental disorders measured by CBCL followed after 5 years. This rate could be explained by the fact that these were potentially severe cases with more recognizable symptoms.

In Brazil, the number of mental health professionals is known to be inadequate to meet the current demand, a common trend found in other LMIC countries (5). In 2010, Brazil had 15.5 psychologists per 100,000 and 3.1 psychiatrists per 100,000. In the same year, Sao Paulo had 20.9 psychologists per 100,000 and 6.3 psychiatrists per 100,000, while Porto Alegre had 29.1 psychologists per 100,000 and 19.1 psychiatrists per 100,000. The difference between living in Sao Paulo and unmet needs, even though not statistically significant, may be explained by these differences in available human resources between the two cities. Such differences may be accounted by economic inequalities between states and regions, as well as differences in government regional investment in mental health services. Differences between country regions were reported by a previous study (7).

In our sample, we found a higher proportion of mixed-race children fulfilling criteria for mental disorders with unmet needs when compared to white children. Since the only other study that sought to identify correlates of unmet needs in Brazil did not assess child race, we are not able to compare our results (7). However, racial disparities in access to mental health services have been reported in the last two decades. In the United States, Latino and African American youth have lower rates of mental health service use when compared to non-Latino and white children (14). Racial and ethnic dynamics vary widely across the globe, leading to multiple potential explanations for these findings. In Brazil, racial inequalities are persistent and pervasive. Data from the latest census showed that the average household income of the white population was more than double that of the black population. Racial economic inequalities could explain the association of mixed race and unmet needs in our current sample. Future studies could confirm this hypothesis, as well as explore other potential correlates and mechanisms that could explain this association.

## **Conclusions**

The high rate of unmet needs of children with mental disorders is alarming and should be addressed with strategies to improve access to the health system and campaigns to enhance awareness about youth mental disorders. The lack of human resources available could be improved by increasing the mental health budget in order to hire an adequate number of mental health professionals. Families with mixed race children

should be prioritized by policy makers. Primary care programs with a national scope could be used as tools to reach this vulnerable group. Also, integrating educational and social systems with health services could help identify and treat children with mental disorders. In Brazil, a country with deep-rooted racial inequalities it is paramount to take into account the role of race as a barrier to health service use. Future studies can determine what are the specific barriers preventing mixed race children with mental disorders from receiving treatment, providing support for the development of mental health policies. Details about treatments being received by children and adolescents with mental disorders should be further investigated by future studies. For instance, understanding if psychotherapies being delivered are based on scientific evidences could help optimize resources and make sure patients receive effective treatments.

## Highlights

1. The majority of the children with mental disorders did not receive mental health treatment (81.0%).
2. Psychotherapy and a combination of psychotherapy with medication were the most used treatment.
3. Being a mixed race child was associated with unmet needs.

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