# Use of Mental Health Services by Children With Mental Disorders in Two Major Cities in Brazil

Daniel Fatori, Ph.D., Giovanni Abrahão Salum, M.D., Ph.D., Luis Augusto Rohde, M.D., Ph.D., Pedro Mario Pan, M.D., Ph.D., Rodrigo Bressan, M.D., Ph.D., Sara Evans-Lacko, Ph.D., Guilherme Polanczyk, M.D., Ph.D., Euripedes Constantino Miguel, M.D., Ph.D., Ana Soledade Graeff-Martins, M.D., Ph.D.

**Objective:** The study examined lifetime use of mental health services among children diagnosed as having mental disorders in two major cities in Brazil and identified characteristics associated with unmet need.

**Methods:** The data were collected as part of the High Risk Cohort Study, a community study conducted in Sao Paulo and Porto Alegre, Brazil. During the period from 2010 to 2011, a total of 2,511 children ages 6 to 12 were assessed, and 652 were given a diagnosis of at least one mental disorder. The current study analyzed data for a subsample of 651 children with complete information on use of mental health services.

**Results:** Eighty-one percent of the children with mental disorders had not received mental health treatment in the past. The majority who received treatment were treated with psychotherapy or a combination of psychotherapy and medication. Mixed-race children were significantly more likely to have unmet need for treatment, compared with white children.

**Conclusions:** The high rate of unmet need among children with mental disorders should be addressed with strategies to improve access to health care.

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Around the world, regardless of national-income level, mental disorders affect 13% of the child and adolescent population (1) and are the leading cause of years lived with disability in this age group (2). Even though there is a wide range of evidence-based interventions available to treat various mental disorders among youths, lack of policies and resources prevent children from obtaining adequate treatment (3). Approximately one-half of children with mental disorders do not receive any treatment (4), potentially leading to worsening of symptoms and a chronic trajectory.

Evidence of mental health service use among children with mental disorders is essential to identify the current gaps in treatment. Such data can provide the basis for future mental health policies and health system changes seeking to bridge these gaps. However, there is a scarcity of evidence for low- and middle-incomes countries, 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 have described mental health service use among children and adolescents. A longitudinal study conducted in a poor municipality of Sao Paulo state (N=93) showed that 62.5% of children and adolescents with persistent mental disorders, as 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 that 80.2% of children and adolescents with mental disorders, as measured by a diagnostic instrument, did not receive treatment (7). Neither study evaluated details about treatments, such as modality, duration, specific medications, and providers. Information about these factors would allow policy makers to optimize distribution of health systems resources. The aim for our study was to describe lifetime use of mental health services among children diagnosed as having mental disorders in two major cities in Brazil, to describe characteristics of the treatments received, and to identify sociodemographic and

**HIGHLIGHTS**

- The majority of the children with mental disorders did not receive mental health treatment (81.0%).

- Psychotherapy and a combination of psychotherapy with medication were the most used treatments.

- Being a mixed-race child was associated with unmet need.

clinical characteristics associated with unmet need for services.

## METHODS

The study was based on data from a large community sample of children ages 6 to 12 from schools in Sao Paulo and Porto Alegre, Brazil. Among 9,937 children who were screened from 57 public schools, we recruited 1,500 children by using a randomized procedure, of which 957 completed assessment. We also recruited 2,371 children by using a procedure that prioritized children at higher risk of mental disorders based on family history of mental disorder or current symptoms in any of five domains: attention-deficit hyperactivity disorder, anxiety, obsessive-compulsive disorder, psychosis, and learning disorders. The purpose of this procedure was to develop a sample with a higher prevalence of mental disorders and to enhance power to identify developmental trajectories. A total of 1,554 children recruited by using this procedure completed assessment. The final sample consisted of 2,511 children. Among the total sample, 652 met the criteria for a diagnosis of at least one mental disorder by means of the Development and Well-Being Assessment (8) administered by trained lay interviewers to biological parents. This study was focused on a subsample of 651 children with complete information on mental disorders and use of mental health services. 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 by caregivers. The study was conducted between 2010 and 2011.

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

Cross-tabulations between use of mental health services (unmet need versus met need) and sociodemographic characteristics were used to describe the 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 odds ratios and p values are reported. To adjust for the oversampling of high-risk children, we used sampling weights derived from propensity scores based on the probability of the child's being selected for the high-risk sample (11). Statistical analyses were conducted using the survey command with sampling weights in Stata 15. We considered the threshold for statistical significance to be $p<.05$ and provided 95% confidence intervals (95% CIs) for parameters.

## RESULTS

Among children ages 6 to 12 who were diagnosed as having 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. The mean duration of treatment among those receiving medication and those receiving psychotherapy was 25.8 months (95% CI=17.1–34.4) and 22.7 months (95% CI=16.5–29.2), respectively. Those who used medication 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=.9%−14.5%), stimulants by 36.1% (95% CI=22.3%−52.8%), anticonvulsants by 30.0% (95% CI=17.7%−46.2%), antipsychotics 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 shows the relationship between child and family characteristics and receipt of mental health services among children diagnosed as having a mental disorder. A higher proportion of mixed-race (black/white) children had unmet need, compared with white children (87.8% versus 77.4%), and mixed-race children were more likely than white children to have unmet need (OR=2.0, p=.036). A higher proportion of children living in Sao Paulo had unmet need, compared with children living in Porto Alegre (86.4% versus 78.2%); however, this difference was not statistically significant. Other characteristics, such as type of mental disorder, were not significantly associated with unmet need.

## DISCUSSION

Our study showed that a high proportion (81.0%) of children with mental disorders did not receive any mental health

**TABLE 1. Characteristics associated with met and unmet need for mental health treatment among 651 children diagnosed as having mental disorders in two cities in Brazil[a]**

| Characteristic | Met need | | Unmet need | | | | |
|---|---|---|---|---|---|---|---|
| | % | 95% CI | % | 95% CI | OR | 95% CI | p |
| City | | | | | | | |
| Sao Paulo | 13.5 | 8.9–20.0 | 86.4 | 80.0–91.0 | 2.1 | .9–4.2 | .056 |
| Porto Alegre (reference) | 21.8 | 16.8–27.7 | 78.2 | 72.3–83.2 | | | |
| Gender | | | | | | | |
| Male | 19.8 | 15.0–25.6 | 80.2 | 74.4–85.0 | .8 | .5–1.5 | .536 |
| Female (reference) | 17.9 | 12.4–25.1 | 82.1 | 74.9–87.5 | | | |
| Age (years) | | | | | | | |
| ≥10 | 16.4 | 11.3–23.3 | 83.6 | 76.7–88.4 | .8 | .4–1.5 | .499 |
| 6–9 (reference) | 21.5 | 16.6–27.5 | 78.4 | 72.5–83.4 | | | |
| Race | | | | | | | |
| Black | 14.0 | 6.8–93.2 | 86.0 | 73.3–93.2 | 1.7 | .7–4.4 | .234 |
| Mixed | 12.3 | 7.2–19.8 | 87.8 | 80.2–92.8 | 2.0 | 1.0–4.0 | .036 |
| White (reference) | 22.5 | 17.3–28.8 | 77.4 | 71.2–82.6 | | | |
| School dropout | | | | | | | |
| Yes | 16.2 | 6.6–3.5 | 83.8 | 65.3–93.4 | 1.8 | .6–5.6 | .322 |
| No (reference) | 19.2 | 15.3–23.7 | 80.8 | 76.3–84.7 | | | |
| School grade retention | | | | | | | |
| Yes | 21.4 | 15.5–29.1 | 78.6 | 70.9–84.7 | 1.0 | .5–1.8 | .970 |
| No (reference) | 18.2 | 13.8–23.6 | 81.8 | 76.4–86.2 | | | |
| Child abuse | | | | | | | |
| Yes | 78.8 | 70.0–85.6 | 21.2 | 14.4–30.0 | .7 | .4–1.5 | .434 |
| No (reference) | 82.2 | 77.1–86.3 | 17.8 | 13.7–22.9 | | | |
| Emotional disorder[b] | | | | | | | |
| Yes | 18.9 | 13.9–25.3 | 81.1 | 74.7–86.1 | .8 | .4–1.8 | .654 |
| No (reference) | 19.0 | 14.0–25.4 | 81.0 | 74.6–86.0 | | | |
| Conduct disorder[c] | | | | | | | |
| Yes | 20.5 | 13.8–29.4 | 79.5 | 70.6–86.2 | .9 | .4–1.9 | .815 |
| No (reference) | 18.3 | 14.1–23.6 | 81.6 | 76.4–85.9 | | | |
| Attention-deficit hyperactivity disorder | | | | | | | |
| Yes | 21.2 | 15.5–17.2 | 78.8 | 71.6–84.5 | .6 | .3–1.3 | .223 |
| No (reference) | 17.2 | 12.7–22.9 | 82.8 | 77.1–87.3 | | | |
| Enrolled in welfare program | | | | | | | |
| Yes | 15.3 | 10.0–22.9 | 84.6 | 77.1–90.0 | 1.5 | .8–2.9 | .228 |
| No (reference) | 20.6 | 16.0–26.1 | 79.4 | 73.9–84.1 | | | |
| Maternal years of schooling | | | | | | | |
| ≤8 | 17.3 | 13.5–21.9 | 82.7 | 78.1–86.4 | 2.1 | .9–4.5 | .061 |
| ≥9 (reference) | 30.2 | 18.0–46.0 | 69.8 | 54.0–82.0 | | | |
| Maternal unemployment | | | | | | | |
| Yes | 13.6 | 6.6–26.0 | 86.4 | 74.0–93.4 | 1.3 | .5–3.3 | .509 |
| No (reference) | 19.2 | 15.2–23.9 | 80.8 | 76.1–84.8 | | | |
| Maternal psychopathology | | | | | | | |
| Yes | 19.8 | 14.8–26.0 | 80.2 | 73.9–85.2 | 1.0 | .5–1.9 | .981 |
| No (reference) | 18.1 | 13.0–24.7 | 81.9 | 75.3–87.0 | | | |

[a] Percentages are weighted to account for oversampling of children at high risk of mental disorders.
[b] Emotional disorders included mood and anxiety disorders.
[c] Conduct disorders included oppositional-defiant disorder and conduct disorder.

treatment in their lifetime. Among those who received treatment, the majority were treated with psychotherapy or a combination of psychotherapy and medication in the public health system. Antidepressants and stimulants were the most frequently used medication classes. Being a mixed-race child was significantly associated with having unmet need.

These findings should be interpreted in light of some limitations. The sample was not representative of the population from the two major cities. Also, the sample was derived through a sampling procedure designed to identify a subsample of children with increased risk of mental disorders. Nevertheless, all analyses were weighted by a score that adjusted for the oversampling strategy. Also, lifetime treatment receipt is subject to recall bias, and our findings could have underestimated the real prevalence of service use. Last, other characteristics not assessed in our study could potentially explain differences between the children whose need were met and those with unmet need. For instance, stigma is known to play an important role in the likelihood that caregivers will seek mental health treatment for young people (12).

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

The rate of unmet need in our study (81.0%) was similar to that found in Paula's (7) epidemiological study, conducted in small Brazilian cities (80.2%). On the other hand, our finding was higher than the rate found in the longitudinal study conducted in the metropolitan area near the city of Sao Paulo (62.5%). However, the longitudinal study focused on children and adolescents with chronic mental disorders as measured by the Child Behavior Checklist and followed them for 5 years. The lower rate could be explained by the fact that the children in the longitudinal study potentially had severe mental disorders 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 low- and middle-income countries (5). In 2010, Brazil had 15.5 psychologists and 3.1 psychiatrists per 100,000 population. In the same year, Sao Paulo had 20.9 psychologists and 6.3 psychiatrists per 100,000 population, while Porto Alegre had 29.1 psychologists and 19.1 psychiatrists per 100,000 population. The difference in the likelihood of unmet need between children living in Sao Paulo and those living in Porto Alegre, even though not statistically significant, may be explained by the differences in available human resources between the two cities. Such differences may be accounted for by economic inequalities between states and regions, as well as by differences between regions in the government's investment in mental health services. Differences between regions were also reported in a previous study (7).

In our sample, we found that mixed-race children who fulfilled criteria for mental disorders were more likely to have unmet need for mental health treatment, compared with white children. Because the only other study that sought to identify correlates of unmet need in Brazil did not assess children's race, we are not able to compare our results (7). However, racial disparities in access to mental health services have been reported in the past two decades. In the United States, Latino and African-American youths have lower rates of use of mental health services, compared with 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 between mixed race and unmet need in our 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 need among 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 mental disorders among youths. The lack of mental health professionals could be addressed by increasing the mental health budget. Services for 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 use of health services. Future studies can determine the specific barriers preventing mixed-race children with mental disorders from receiving treatment and can provide support for the development of mental health policies. Details about treatment received by children and adolescents with mental disorders should be further investigated in future studies. For instance, understanding whether the psychotherapies being delivered are based on scientific evidence could help optimize resources and help make sure patients receive effective treatments.

**AUTHOR AND ARTICLE INFORMATION**

Department of Psychiatry, University of Sao Paulo Medical School, Sao Paulo, Brazil (Fatori, Polanczyk, Miguel); Department of Psychiatry, Federal University of Rio Grande do Sul, Porto Alegre, Brazil (Salum, Rohde, Graeff-Martins); Department of Psychiatry, Federal University of Sao Paulo, Sao Paulo, Brazil (Pan, Bressan); Personal Social Services Research Unit, London School of Economics and Political Science, London (Evans-Lacko). Send correspondence to Dr. Fatori (daniel.fatori@gmail.com).

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