

The Child Mental Health Treatment Gap in an Urban Low-Income Setting: Multisectoral Service Use and Correlates

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Objective: To efficiently target capacity-building efforts for child mental health services in low- and middle-income countries (LMICs), it is critical to define how care is structured across sectors and individual-level factors.

Methods: In a community-based sample of 1,408 children and adolescents (ages 6–15 years) from Itaboraí, Brazil, the authors assessed need and service use across four care systems (mental health specialty, health, welfare, and informal). Individual-level factors included child gender and age, maternal perception of child mental health need, paternal absence, maternal education, and maternal anxiety and depression.

Results: The mental health treatment gap was 88%, with only 12% of children with psychiatric problems using mental health services. Children with mental health problems were more likely than those without these problems

to use health and other sectors of care and to use services in more than one sector of care. Overall, 46% of the children with any clinical mental health problems and 31% of those with only internalizing problems were identified by their mothers as having a mental health need. Among those with clinical mental health problems, factors associated with mental health service use were being a boy and paternal absence but not mental health problem type or maternal awareness.

Conclusions: Closing the child mental health treatment gap in urban settings in LMICs where resources are scarce will likely require system-level changes, such as engagement of diverse service sectors of care. Interventions need to target increased maternal awareness about mental health problems and encourage provision of mental health services to girls.

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Psychiatric and substance use disorders are the number one cause of disability among children and adolescents worldwide (1); moreover, almost 90% of the world's children live in low- and middle-income countries (LMICs) (2), where the resources to treat these disorders are most scarce. Because untreated mental illness hinders individual, social, and economic prosperity (3), improving access to child mental health care services is an important focus of global development efforts. However, although several evidence-based interventions for treating mental disorders among children have been shown to be effective in LMICs (4), determining how and where to implement these interventions remains uncertain.

To devise effective strategies for improving child mental health care capacity and to achieve the implementation of evidence-based interventions into existing systems of care in LMICs, it is critical to properly estimate current mental health service use. Previous assessments of child mental

health care service provision and use in LMICs have documented an abysmal treatment gap (5, 6), that is, a large gap

HIGHLIGHTS

- The child mental health treatment gap was 88% in Itaboraí, Brazil, with only 12% of children with psychiatric problems using mental health services.
- A cross-sectoral approach is needed to close the child mental health treatment gap, likely integrating mental health care into other sectors.
- A meaningful increase in child mental health services may need to integrate system-level changes with individual factors, such as maternal awareness about child mental health problems.
- Strategies that improve the use of mental health services by girls are needed.

between mental health care need and actual service use. The precision of these estimates, however, is hard to assess because, with some exceptions (7, 8), most have relied on key informants at the national level or have lacked representative samples of services in urban areas, where most of the population is concentrated and where risk factors for mental disorders are high (9).

Additionally, to efficiently allocate limited resources in LMICs, it is imperative to understand how children with mental health problems use care services in sectors other than mental health specialty care (10). Children with mental health problems, even those without any contact with the mental health specialty sector, frequently receive some type of care in other settings. These settings may include primary care clinics, schools, the juvenile justice system, and the welfare sector, among others (11, 12). Because of these patterns, a cross-sector approach has been taken to study child mental health care in high-resource areas, where, despite better coverage, specialized services for child mental health care are insufficient and could benefit from greater integration across settings (13, 14). However, despite global recognition of the importance of using a cross-sector approach to closing the mental health treatment gap (15), the sectors in which children with mental health problems use services in LMICs remain unclear (16).

At the individual level, studies have identified several factors that affect child mental health service use (11, 12, 17). For example, children with internalizing problems (including depression and anxiety) use services less often than do children with more overt behavioral problems (i.e., externalizing disorders) (18, 19). Parental factors, such as perceived burden and concern, as well as parental perception of barriers related to systemic and structural issues have also been related to child mental health service use (20–23).

A cross-sectional evaluation in four cities across four regions of Brazil found a 13% prevalence of mental disorders among children and adolescents; moreover, just 20% of those with a mental disorder sought child mental health care specialty treatment in the past year (8). To adequately, accurately, and comprehensively assess the child mental health care treatment gap, a broader lens is warranted, shifting the focus to understanding the diverse sectors of care in which Brazilian children with mental health problems are receiving services, and what factors contribute to service use in different sectors.

In this study, we conducted a system-wide assessment based on maternal reports to understand where children with mental health needs were being seen in the city of Itaboraí (state of Rio de Janeiro), Brazil. We had an additional focus on the correlated individual-level factors associated with children's service use. Specifically, we examined service use by children with and without mental health problems across the following four sectors of care. The first sector was mental health specialty, which included care from psychiatrists or psychologists; an overnight stay in a psychiatric hospital, psychiatric unit in a general hospital, or

substance abuse clinic; and outpatient care in a mental health or substance abuse clinic. The second sector was health, including care from nonpsychiatric providers (such as pediatricians, family doctors, general practitioners, community health workers, and other health professionals) or care received during an emergency department visit, an overnight stay in a general hospital, outpatient treatment in community health centers, or participation in the family health program. The third sector was welfare, which included care from social workers or outpatient welfare services within the governmental social support system (Social Assistance Reference Center–Specialized Social Assistance Reference Center) and attention received from the Guardianship Council, which mediates between the community and local health-welfare systems and responds to a wide range of situations, such as child abuse and school dropout. The fourth sector was informal care, including religious centers, traditional healers, or self-help groups. Across all these sectors, most services are accessible free of charge; however, service provision and quality are not optimal (24).

We also examined maternal perception of child mental health needs. Finally, we determined the types of mental health problems and sociofamilial characteristics associated with child mental health care service use in this context.

METHODS

Study Setting

This study was conducted in Itaboraí, a low-income, medium-size city (218,008 inhabitants, 98% urban) located in southeastern Brazil (25). According to the last census in 2010, children ages 0–18 years comprised 30.5% of the Itaboraí population. Within the past few years, Itaboraí has undergone a large economic downturn. This recession was the result of a failed plan to build a large oil refinery in the city, which resulted in unemployment, economic destabilization, and violence during the study data collection period (26).

Study Design and Sampling

A probabilistic, community-based sample of 1,408 children and adolescents (ages 6–15 years, including 720 adolescents ages 11–15) was assessed in 2014 as part of the Itaboraí Youth Study (27) (for detailed methods, see an online supplement to this article).

Measures

Mothers were asked about their child's past-year service use for any health problem with a version of the Service Assessment for Children and Adolescents (28), followed by questions about youth mental health problems (see the Child Mental Health Problems section). The services and professionals were classified into four sectors of care.

Individual Factors

Child mental health problems. The Brazilian version (29) of the Child Behavior Checklist (CBCL) was used to identify child emotional and behavioral problems in the past 6 months (27). Children with mental health problems were those with any CBCL scale T scores in the clinical range, including the three broadband scales (internalizing problems, externalizing problems, and total problems) and the eight narrowband scales (anxious-depressed, withdrawn-depressed, somatic complaints, social problems, thought problems, attention problems, rule breaking, and aggressive behavior). Children without mental health problems were those who had all CBCL scale T scores in the borderline to normal range. On the basis of these scores, children were categorized as having any mental health problem (yes or no) and by type of problems (five categories): internalizing only, externalizing only, both internalizing and externalizing, other problems with no internalizing or externalizing (T scores in the clinical range for any of the eight narrowband or for the total problems scales), or no problems.

Maternal perception of child mental health need. After service use information was collected, one question (with a yes or no answer) investigated maternal perception of child mental health need: "Have you thought your child has recently had emotional or behavioral problems?"

Potential correlates. Demographic variables included children's age (in years) and gender (boy or girl), maternal education (<8 years or ≥8 years of schooling) and paternal absence (mother with or without a resident husband or partner). The 20-item Self-Reporting Questionnaire (30) was used to identify maternal anxiety or depression, with a total score >7 indicating presence of at least one of these conditions (31).

Statistical Analysis

For all analyses presented, absolute numbers of participants were unweighted (i.e., refer to the sample), whereas percentages were weighted (i.e., refer to city population). We used SPSS, version 20, and considered $p < 0.05$ as statistically significant in all analyses. First, we estimated prevalence of service use in the past year across the four sectors of care for the total sample and for children with different types of emotional and behavioral problems (dichotomous and categorical variables, described earlier). Second, for children with and without mental health problems, we quantified the use of multiple sectors of care. Third, we used multiple logistic regression models to examine the association between a child having mental health problems (model 1 with dichotomous variables and model 2 with categorical variables) and receiving services in each of the four sectors of care, adjusted by potential individual-level correlates. Fourth, after determining how many mothers of children with any mental health problem perceived a mental health need, we examined, among children with a mental health problem,

associations between type of mental health problem and child mental health specialty service use, adjusting for individual-level correlates and maternal perception of child mental health need.

RESULTS

Of the total sample of children and adolescents ($N=1,408$), 6% used the mental health specialty sector, 71% used the health sector, 3% used the welfare sector, and 5% used some type of informal care (Table 1). Mothers did not report the use of shelters. Among children who had a mental health problem ($N=316$), only 12% used mental health specialty services. Compared with children without mental health problems, children with mental health problems used the health, welfare, and informal sectors more frequently (68% vs. 80%, 2% vs. 7%, and 2% vs. 13%, respectively). Additionally, children who had both internalizing and externalizing problems used the mental health specialty sector more frequently (14%) than those who had only internalizing (9%) or only externalizing (8%) problems. Of the children with other problems (not internalizing or externalizing), 29% used the mental health specialty sector.

We next explored combinations of services used by children with and without mental health problems. Most children with (60%, $N=186$) and without (63%, $N=669$) mental health problems used services exclusively in the general health sector (see online supplement). Compared with children without mental health problems, children with mental health problems more frequently used services in two (6% [$N=67$] vs. 15% [$N=51$], respectively) as well as three or four (1% [$N=6$] vs. 7% [$N=19$], respectively) sectors (see online supplement). Compared with children without mental health problems, those with mental health problems more often used services outside of the health sector (4% [$N=42$] vs. 11% [$N=38$], respectively) and received care in mental health specialty combined with health sector services (3% [$N=38$] vs. 11% [$N=35$], respectively).

Multiple logistic regression models correlating child mental health problems and use of services in each sector of care while adjusting for relevant individual-level covariates (gender, age, paternal absence, maternal education, and maternal anxiety or depression), revealed that the odds of a child with any mental health problem using services compared with children without mental health problems ranged from adjusted odds ratio (AOR)=1.77 (health sector) to AOR=4.49 (informal care) (Table 2). Having both internalizing and externalizing problems was associated with increased use of services in all sectors (AOR range=3.05–5.65). Children with other types of problems had higher odds of using mental health specialty services (AOR=5.37) than those with internalizing and externalizing problems. In the health sector, having both internalizing and externalizing problems (AOR=3.05) and having internalizing problems only (AOR=1.87) were associated with service use but not externalizing only or other problems. In the welfare sector,

having externalizing problems only (AOR=3.35) and both internalizing and externalizing problems (AOR=4.99) were associated with service use. Children with internalizing or externalizing problems, but not other problems, were more likely to use the informal sector than those without problems.

Because maternal identification of need is a critical initiator of child mental

health care service use, we next examined the relationship between child mental health problems and maternal perception of child mental health needs (Table 3). Among all participants, 16% of mothers identified their children as having a mental health need. Less than half (46%) of the children with any mental health problem were identified by their mothers as having a mental health need. Children with both internalizing and externalizing problems were most frequently (61%) identified by their mothers as having a mental health need. Mothers identified need in less than one-third (31%) of children with only internalizing problems.

We then investigated, among children with mental health problems (N=316), how type of mental health problem, maternal perception of child mental health needs, and potential individual-level correlates were related to use of a mental health service (Table 4). In the adjusted model, a child using mental health services was not significantly correlated with type of mental health problems or maternal perception of child mental health problems, but it was significantly associated with the child being a boy (AOR=2.93) and paternal absence (AOR=2.36).

DISCUSSION

Using a community-based sample, here we document an 88% child mental health treatment gap in a medium-size, low-income city in Brazil (i.e., just 12% of children with mental health problems used mental health services). Similar to our findings, in two large Brazilian state capitals (São Paulo and Porto Alegre), the mental health treatment gap was

TABLE 1. Past-year service use among children and adolescents in Itaboraí, Brazil, with and without mental health problems, by sector of care^a

Variable	Total N	Mental health specialty		Health		Welfare		Informal	
		N	% ^b	N	% ^b	N	% ^b	N	% ^b
Total sample	1,408	86	6	996	71	43	3	67	5
Any mental health problem ^c	316	38	12	254	80	21	7	41	13
No mental health problem	1,092	48	4	742	68	22	2	26	2
INT (not EXT) problems	109	11	9	88	85	<5	5	12	10
EXT (not INT) problems	71	7	8	52	74	5	10	9	14
Both INT and EXT problems	110	15	14	97	84	11	7	19	16
Other problems (not INT or EXT)	26	5	29	17	74	<5	9	<5	4

^a EXT, externalizing; INT, internalizing.

^b Weighted percentages.

^c Any broad- or narrowband Child Behavior Checklist scale with T scores in the clinical range.

81% among children ages 6–12 years (32). Documented rates of past-year mental health service use by children with mental disorders vary widely across global settings. For instance, treatment rates were 11% in Puerto Rico (33), 14% in Mexico City (7), and 51% in the United States (34). In addition to limited available services, high levels of stigma (35), coupled with lack of awareness about child mental health problems at the individual (36) and policy levels (5), likely contribute to the large child mental health treatment gap in LMICs.

At the system level, children with mental health problems used health, welfare, and informal sectors of care more often than did those without such problems. Additionally, children with mental health problems were more likely to use services in more than one care sector. Although data are limited on multisectoral child mental health care engagement in LMICs, a previous study of children with mental health problems in Mexico City reported findings similar

TABLE 2. Association between mental health problems and past-year service use among children and adolescents in Itaboraí, Brazil, for the four sectors of care^a

Model	Mental health specialty		Health		Welfare		Informal	
	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Model 1								
Any child mental health problem ^b	2.80***	1.73–4.54	1.77***	1.28–2.44	3.21***	1.65–6.22	4.49***	2.60–7.77
Model 2 ^c								
INT (not EXT) problems	2.28*	1.10–4.72	1.87*	1.12–3.11	1.86	.60–5.81	3.90**	1.81–8.39
EXT (not INT) problems	2.34*	1.01–5.44	1.25	.72–2.16	3.35*	1.22–9.24	5.06***	2.25–11.40
Both INT and EXT problems	3.09***	1.58–6.07	3.05***	1.65–5.63	4.99***	2.16–11.52	5.65***	2.84–11.25
Other problems	5.37**	1.89–15.20	.96	.42–2.19	1.67	.21–13.11	1.24	.16–9.75

^a Associations were adjusted for individual-level correlates. EXT, externalizing; INT, internalizing.

^b Any broad- or narrowband Child Behavior Checklist scale with T scores in the clinical range. Reference was children with no mental health problem.

^c Reference was children with no mental health problem.

*p≤0.05, **p≤0.01, ***p≤0.001.

TABLE 3. Maternal perceptions of the mental health needs of children and adolescents in Itaboraí, Brazil, by mental health problem^a

Variable	Total N	Mother-perceived mental health need	
		N	% ^b
Total sample	1,408	212	16
Child mental health			
Any mental health problem ^c	316	142	46
No mental health problem	1,092	70	6
Child mental health problems			
INT (not EXT) problems	109	38	31
EXT (not INT) problems	71	25	40
Both INT and EXT problems	110	69	61
Other problems ^d	26	10	47
No problems	1,092	70	6

^a EXT, externalizing; INT, internalizing.^b Weighted percentages.^c Any broad- or narrowband Child Behavior Checklist scale with T scores in the clinical range.^d Other Child Behavior Checklist scale (not INT or EXT) T scores in the clinical range: total problems and eight narrowband scales.

to those of our study. In the Mexican study, children with mental health problems most often used services in the health sector and in combination with care in the welfare service, school, and alternative medicine sectors (37). This growing evidence supports the need for child mental health care in diverse sectors of care to close the treatment gap in LMICs.

Among individual-level factors relevant to children with mental health problems, and contrary to previous reports in other populations (18, 19, 38), service use was similar among those with externalizing and internalizing (usually harder-to-notice) problems. However, children with “other” or both types of mental health problems had the highest rates of service use. These findings suggest that in the studied context, complexity of symptoms (possibly indicating symptom severity) may be more important for service use than the type of symptom. Some of the variation identified across the four care sectors can clearly be helpful to inform interventions. For example, children with internalizing problems more likely used health and informal (i.e., care in religious centers, traditional healers, and self-help groups) sectors; thus, implementation of services targeting internalizing disorders in these care sectors, but not in the welfare sector, may be a good strategy in similar low-resource settings. In addition, use of informal care by children with mental health needs was higher than among those without mental health needs. As opposed to other sectors of care, this result was true even for children without comorbid conditions (with internalizing-only or externalizing-only problems). This finding may indicate that informal care may be more accessible than formal sectors of care to children with mental health needs that are not overly complex.

Previous research indicates that when parents recognize that their child has a mental health problem, the child is

TABLE 4. Individual-level factors related to past-year mental health service use among children and adolescents in Itaboraí, Brazil, with any mental health problems (N=316)^a

Individual-level factor	Adjusted OR	95% CI
Child mental health problem (reference: INT [not EXT])		
EXT (not INT) problems	.90	.31–2.65
Both INT and EXT problems	1.16	.48–2.83
Other problems	2.28	.64–8.15
Child gender (reference: female)	2.93**	1.36–6.35
Age (continuous)	.94	.83–1.07
Father absent (reference: father present)	2.36*	1.14–4.87
Maternal education (reference: 0–7 years of education)	.87	.42–1.81
Maternal anxiety and depression (reference: SRQ-20 score <8)	1.21	.57–2.58
Maternal perception of child mental health problems (reference: no perception)	1.55	.74–3.27

^a EXT, externalizing; INT, internalizing; SRQ-20, 20-item Self-Reporting Questionnaire.* $p \leq 0.05$, ** $p \leq 0.01$.

more likely to use services (39). Concerningly, we found that less than half of children with a mental health problem were identified as having such problem by their mothers. Consistent with our results, in previous studies, among children with a mental health problem, having both internalizing and externalizing problems increases problem recognition by mothers (40).

Even when parents recognize that their children have behavioral problems, they may not seek services because of a host of reasons, such as absence of good-quality services, long waitlists, stigma or fear of being judged for their child having such problems, not experiencing these problems as being burdensome enough, or the expectation that such problems will have no consequences in the future (41–43). The only factors that we found significantly correlated with child mental health service use among children with mental health problems were having an absent father and being a boy. In our study, paternal absence may have been closely related to maternal perceived burden, given that mothers would have had to deal with their child's problems alone and may have been more likely to seek help from child mental health care services. Our finding that being a boy increased the likelihood of using a mental health service is in agreement with those of previous studies in Brazil (8) and Puerto Rico (44). The Puerto Rico study reported that functional impairment, not the severity of psychopathology, was associated with gender differences in service utilization. The authors hypothesized that parents may make assumptions that boys with impairments are more likely to get into serious difficulties when they grow older (e.g., contact with law enforcement, dropping out of school, and drug use) compared with girls (44); this hypothesis is also applicable to the Brazilian context of children living in disadvantaged urban areas. Likely, individual factors influencing service

use are shaped by system-level factors, including stigma, distance, wait time, and care sector where a service is delivered, among others. Brazil faces an insufficient pediatrician-to-child ratio (18.9 per 100,000 population) (45) and a model of care that reflects inequalities in a structure that is limited to respond to the health needs of children (46).

Our findings should be considered in light of the study's limitations. First, this study did not include institutionalized children who were not current household residents; possibly because of this reason, the juvenile justice sector, for example, was not represented in the sample. Second, only one city (Itaboraí) in one Brazilian state (Rio de Janeiro) was included, raising questions about the generalizability of the findings to other contexts. However, the situation in Itaboraí was likely very similar to those of other medium-size cities in Brazil and possibly other LMICs. Third, the study did not include indicators of the quality of the child mental health care available, an important factor not achievable within the scope of this study. Fourth, our conclusions are based on cross-sectional information, mostly reported by the same informant (mothers); moreover, maternal perception of child mental health needs was based on maternal report on a single item.

CONCLUSIONS

Closing the child mental health treatment gap in LMICs is critical to the individual, social, and economic prosperity of millions of children worldwide. Given the paucity of child mental health services in LMICs, our findings underscore the advantage of integrated models of care. By expanding the availability of services to health and other sectors, integrated models of care may also contribute to improved recognition of child mental health needs in cases in which parents are seeking services for reasons other than mental health care. The integration of sectors of care should aim to maximize the efficient use of scarce child mental health services as well as deploy task-shifting strategies that would enable training of nonmental health professionals across different sectors of care in child mental health care and contribute to addressing unmet child mental health needs in different LMIC contexts.

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