



## The impact of territorial care in the treatment of people diagnosed with schizophrenia and delusional disorders in a Rio de Janeiro community

El impacto del cuidado territorial en el tratamiento de personas diagnosticadas con esquizofrenia y trastornos delirantes en una comunidad en Río de Janeiro

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**ABSTRACT** Care for people diagnosed with schizophrenia and delusional disorders involves many challenges, especially in territorial contexts of pronounced social vulnerability. In Rio de Janeiro, the two decades after the passing of Federal Law 10,216 on Psychiatric Reform in 2001 have been characterized by the transition from a hospital-centered model to one based on community services. Taking the case of a community in Rio de Janeiro, data was extracted from the medical records of 94 patients diagnosed with schizophrenia, schizotypal disorders, and delusional disorders (ICD-10 codes F20 to F29) in five public health services. Covering the period from 2003 to 2016, indicators of the quality of treatment provided were analyzed. As a result of this transition, psychiatric hospitals have all but emptied and a low number of currently untreated patients can be observed. In addition, crisis care and long-term hospitalizations have been replaced by territorial care, and clinical comorbidities are monitored and treated at Family Health Units.

**KEY WORDS** Mental Health; Family Health Strategy; Schizophrenia; Mental Health Services; Brazil.

**RESUMEN** El cuidado de personas diagnosticadas con trastornos esquizofrénicos y delirantes representa un desafío, especialmente, en territorios de gran vulnerabilidad social. En Río de Janeiro, con la promulgación de la Ley Federal 10216 de 2001 sobre la Reforma Psiquiátrica, las últimas dos décadas se han caracterizado por la transición del modelo centrado en el hospital al modelo basado en los servicios comunitarios. Utilizando el caso de una comunidad de Río de Janeiro, se seleccionaron cinco servicios de salud pública y se extrajeron datos de los registros médicos de 94 pacientes con diagnósticos de esquizofrenia, trastornos esquizotípicos y trastornos delirantes (codificados en la Clasificación Internacional de Enfermedades 10 edición entre los códigos F20 a F29) y se analizaron indicadores de calidad del tratamiento ofrecido en el período 2003-2016. Como resultado de la transición se observa que los hospitales psiquiátricos quedaron casi vacíos con un bajo número de pacientes actualmente desatendidos. Además, la atención a la crisis y las hospitalizaciones a largo plazo se reemplazaron por la atención territorial y las comorbilidades clínicas se monitorean y se tratan en unidades de salud familiar.

**PALABRAS CLAVES** Salud Mental; Estrategia de Salud Familiar; Esquizofrenia; Centros de Atención Psicosocial; Brasil.

## INTRODUCTION

We are living through difficult times, in which the achievements of generations of Brazilians are being questioned, put at risk and even threatened to be undone. The so-called Brazilian Psychiatric Reform is one of these achievements, which has been widely acclaimed as a successful experience and set as an example for countries of continental dimensions such as Brazil.<sup>(1,2)</sup> The great challenge of the Reform, which was inspired by the transformations in the care of mental health patients in the Western world in the decades following World War II, was that territorial and community care are much better options than the care provided at a psychiatric hospital, even in the case of patients suffering from severe mental disorders, that is, those individuals who had undergone disruptive conditions in their lives and who were diagnosed with schizophrenia or delusional disorders, according to the International Classification of Diseases 10<sup>th</sup> Revision (ICD-10). In this sense, the construction of a community care network to replace the psychiatric hospital is fundamental.<sup>(3)</sup> This was the path followed by Brazil to implement the Community Mental Health Centers [CAPS for its acronym in Portuguese], which were articulated with primary health care, through its Family Health Strategy teams and the family health support nuclei – NASF. However, it is necessary to determine whether this strategy actually works.

For this purpose, this research aims to demonstrate that the implementation of the Family Health Strategy teams, which include a female psychiatrist that provides matrix support in mental health from the family health support nuclei – NASF and a CAPS III (with overnight admission beds) in the same territory, is sufficient to care for the patients suffering from severe mental disorders and that, in turn, these patients and their families avoid resorting to the psychiatric emergency department and psychiatric hospital admissions. Moreover, this articulation improves these patients' physical health care as well as treatment adherence.

In Brazil, the psychosocial care network consists of various services, and the access to these services is concentrated on primary care services, which are structured through the Family Health Strategy, composed of teams that include a family doctor, a nurse, a nursing technician, and community health agents, who are responsible for the families residing in a specific territory (between 3,000 and 4,000 individuals). Every nine Family Health Strategy teams, there is a family health support nucleus – NASF, responsible for the matrix support of these teams. This nucleus includes a number of specialists, among them, a psychiatrist or a mental health professional, who is in charge of the consultations jointly with the Family Health Strategy teams, in those situations that the team deems necessary. Moreover, the community mental health centers are part of the network of services that care for people that suffer from severe mental disorders (and diagnosed with schizophrenia, delusional or affective disorders, and who have a certain inability to cope with daily relationships of work, study and recreational activities). These CAPS offer daily activities (workshops, groups, consultations, among others) and some of them have beds to care for people who need comprehensive care during specific periods. It should be highlighted that the CAPS are also territorialized, i.e., they are in charge of the mental health care of the population assigned to their territory (around 200,000 residents) and must work in close connection with the Family Health Strategy teams in their territory. In addition to the CAPS for severe mental disorders, there are also other CAPS for alcohol and other drugs, as well as for children and adolescents.<sup>(4,5)</sup> It is important to mention that before the implementation of the Family Health Strategy, there used to be municipal health centers that were outpatient services that lacked the logic of responsibility for the health of a territory and attended specific medical specialties, such as general practice, pediatrics, gynecology and obstetrics, among others. Many of these centers became family health units in which Family Health Strategy teams were implemented.

This was the case of the center that is the subject matter of our research study: the CMS R (the real name of the health center has been omitted to preserve the participants' identity and was replaced by a letter).

### The studied territory

The community where we developed our study is considered the largest *favela* [a slum or shantytown located within or on the outskirts of Brazil's large cities] in the city of Rio de Janeiro. It has a population of 98,319 residents, distributed in 34,576 households, according to the data provided by the Household Census, conducted by the social work of the Growth Acceleration Program [*Programa de Aceleração do Crescimento*].<sup>(6)</sup> Despite being located in a well-off urban area, it has one of the worst rates of social development in the city: it ranks 151 out of a total of 158 neighborhoods, according to a research study carried out in 2008 by the Pereira Passos Municipal Urban Planning Institute, which extracted data from the 2000 Population Census of the Brazilian Institute of Geography and Statistics (IBGE, for its initials in Portuguese),<sup>(7)</sup> thus revealing the degree of social vulnerability of its population as well as the extreme social inequality.

Women account for 51.5% of the population, of which 37.5% are heads of households. Children and adolescents up to 18 years of age represent 32% of the population. Individuals aged 65 years or more account for only 3.5% of the population. The simple illiteracy rate is 4.4%. Unemployment impacts on 10.7% of the population and 57.1% of the people have no income at all.<sup>(6)</sup> Many of them work in the rich area of the region, in stores, bars and restaurants, in family homes and as janitors in buildings. Others work in the community, in shops and transportation such as vans and motorcycle taxis.<sup>(7)</sup> There are no specific epidemiological studies in the community about mental disorders.

The opportunity to undertake this study arose from the fact that, in 2010, a CAPS III with nine beds was implemented in this

community; in 2011, six Family Health Strategy teams in an already existing municipal health center (17,130 inhabitants for six teams) and, in 2012, a psychiatrist joined the support nuclei for the Family Health Strategy of the CMS R. Its objective was to map the trajectories of the patients with severe mental disorders through the mental health services before and after the implementation of the community service network, with the aim of testing our hypothesis that community services can effectively replace emergency department visits and the psychiatric hospital.

### Context

Mental, neurological disorders and those caused by the use of alcohol and drugs account for 14% of the global burden of disease, and nearly three-quarters of them occur in low- and middle-income countries. In these countries there is a treatment gap that accounts for over 75%.<sup>(8)</sup>

In 2008, the WHO launched the *Mental Health Global Action Programme*, a global action program to improve access to mental health treatment. The aim of this program was to strengthen primary health care, increasing its resolution capacity in the care of patients suffering from mental disorders. Among the essential attributes of primary care, it should be highlighted that it is the patient's first contact with the health care system and the continuity, comprehensiveness and coordination of care in the system. The Family Health Strategy has been the primary care model that has expanded the most in Brazil and, in the municipality of Rio de Janeiro, health coverage which in 2008 accounted for 3.5% increased to 60% in 2015.<sup>(9)</sup> This increase was of great significance to restructure mental health care without restricting it to specialized services. To achieve this goal, the Ministry of Health created the family health support nuclei, through GM Ordinance No. 154,<sup>(10)</sup> of January 24, 2008, to support the work performed by the Family Health Strategy, expanding its scope, resolution capacity, territorialization and regionalization.<sup>(11)</sup>

The family health support nuclei and the CAPS III have promoted matrix support in mental health together with the Family Health Strategy teams. Matrix support is the collaborative care model in Brazil, which was developed in accordance with the model proposed by Campos in Campinas<sup>(12,13)</sup>. Collaborative care is an effective model to articulate mental health with primary health care, with the aim of improving the quality of physical and mental health of the individuals suffering from psychiatric disorders, through the establishment of a closer working relationship between the professionals in the first level of care and mental health specialists.<sup>(14)</sup>

Matrix support aims to reduce the shortcomings reported by Family Health Strategy professionals in the accompaniment of mental health patients, which occur for various reasons,<sup>(15,16)</sup> especially in those patients suffering from severe mental disorders.<sup>(17)</sup> Even so, the high prevalence of mental disorders in the population and the complexity of the cases continue to affect the access to and the continuity of mental health care. With regard to common mental disorders, their prevalence in the community populations of Brazil accounts for 25%, and 50% of the patients with these disorders that are treated in primary care units.<sup>(18)</sup>

The integration of mental health into primary health care plays an important role in changing the care model, which had previously been centered on the psychiatric hospital. The hospital-centered model was questioned in various countries during the second half of the 20th century, giving rise in Brazil to a movement known as Psychiatric Reform, which started in the 1970s, simultaneously with the Health Reform. It is a political and social movement that proposes transformations in the field of practices, knowledge, social and cultural values, with the aim of promoting the citizenship of psychiatric patients. This reform accomplished a 20,000 psychiatric bed reduction between 2001 and 2010.<sup>(19)</sup> With the commitment assumed by Brazil with the signing of the Declaration of Caracas and by holding the II National Conference on Mental Health, the first federal

regulations governing the implementation of care services based on the experiences of the first CAPS and day hospitals and the first rules to supervise and classify psychiatric hospitals came into force. In 2001, Federal Law 10,216 was passed, which provides for the protection and the rights of individuals suffering from mental disorders.<sup>(20)</sup>

Currently, the Brazilian Psychiatric Reform is characterized by two simultaneous movements: the creation of a mental care network that replaces the model centered on hospitalization and the monitoring and progressive and planned reduction of existing psychiatric beds.<sup>(21)</sup> However, authors such as Thornicroft and Tansella<sup>(23,24)</sup> have analyzed the evidence generated by hospital-based and community-based mental health services for adults, pointing out that a mental care system should be based on the balance of both services. These two authors developed the balanced care model [*Modelo balanceado de cuidado*], in which community and hospital services are present in quantities and functions based on local resources. There is no global consensus as to which type of mental health service is most appropriate in resource-rich or resource-poor areas.<sup>(23)</sup> Therefore, the aim of this study is to analyze the effects of the implementations of the Family Health Strategy, the family health support nuclei – NASF, and the CAPS III on the treatment trajectories of patients diagnosed with schizophrenic and delusional disorders, in a municipal health center of a community in Rio de Janeiro.

## METHODOLOGY

### Study design

A quantitative descriptive case study, which analyzed the treatment trajectories of patients aged 18 years or older suffering from schizophrenic and delusional disorders, was conducted. The list of patients was extracted from the diagnoses of schizophrenia, schizotypal and delusional disorders classified between the ICD-10 F20 and F29 codes, registered as active patients in the VitaCare

electronic medical records of the CMS R between 2011 and 2016. A data collection instrument was developed to obtain relevant information related to the clinical and psychiatric follow-up in the municipal health center R and the following mental health services: CAPS III, Municipal Psychiatric Institute, University Psychiatric Institute and the Municipal Health Center CMS G. The electronic medical record was implemented in the CMS R in May 2011; in CAPS III and CMS G, in 2015, whereas the Municipal Psychiatric Institute and the University Psychiatric Institute do not have electronic medical records, but only physical ones. The physical medical records of the CAPS III were also reviewed, with registrations prior to 2015, although it was not possible to analyze those of the CMS G. In all the services reviewed, data collection included the year 2016. A database was created from the list that included those individuals diagnosed with schizophrenia and delusional disorders who were attended by the CMS R Family Health Strategy teams between 2011 and 2016, and the registration of these same patients was searched since 2003, in the psychiatric institutions existing before the implementation of the Family Health Strategy and the CAPS III in the studied territory (Municipal Psychiatric Institute, University Psychiatric Institute and the CMS G).

Based on the prevalence of schizophrenic and delusional disorders in the general population, the number of individuals with schizophrenia and delusional disorders among the population attended by the CMS R family health strategy teams were estimated, to verify whether those individuals cared for at the CMR in fact corresponded to the expected number of people suffering from those disorders.

In order to analyze the follow-up of patients in the health care services, we started with the 94 clinical records of patients with mental disorders at the CMS R and searched in the remaining mental health services studied whether these 94 patients already had clinical records and when they had made their consultations, with the aim of verifying if by attending the CMS R, they had stopped

searching for hospitals and specialized services. As a result of tracking the 94 patients attending the CMS R, 219 clinical records were retrieved. We also verified in which specific services those 94 CMS R patients had received their follow-up and their respective distribution. Furthermore, data related to the diagnosis and treatment of the clinical comorbidities of the patients were collected with the aim of assessing the clinical care received at the CMS R by the analyzed patients. The periods of treatment abandonment in each service were also recorded and the abandonment rates were compared. To analyze the data related to hospitalizations, the dates on which the patients attended the Municipal Psychiatric Institute and the hospitalization periods in that institution and in the University Psychiatric Hospital were recorded, as well as the night visits to the CAPS III, and their evolution over time and the demand for emergency service were also analyzed.

### **Presentation of the CMS R**

This municipal center is located on the hill-sides of a large community in the southern area of Rio de Janeiro and is in charge of assisting a population of 17,130 individuals. The center was inaugurated in 1982 and the six Family Health Strategy teams were implemented in January 2011. These teams and the family health support nuclei provide individual and joint consultations, conduct home visits, workshops and group consultations, health promotion actions, weekly team meetings and general meetings with the entire unit. The family health support nuclei include specialization areas such as psychiatry, psychology, neurodevelopmental pediatrics, nutrition, physical education, social assistance and physiotherapy. The onsite female psychiatrist has worked in the unit since January 2012, while the other professionals in the support nuclei started working in 2015.

The female psychiatrist in the support nucleus works jointly with the team doctor, once a month per team, and that day up to eight patients can be scheduled for consultation.

Once a week, she conducts home visits together with the community health agent, or, eventually with the team doctor or nurse. The psychiatrist sometimes deals with the most urgent cases by herself, or, eventually refers them to other professionals (interconsultations). However, individual psychiatric medical care is not always possible in this unit on a regular basis as there are not enough doctor's offices. The Family Health Strategy with the help of the family health support nuclei is in charge of the follow-up of mild to moderate cases. Moderate to severe patients who need outpatient psychiatric follow-up are referred to the CMS G outpatient psychiatric service, and those who need intensive follow-up are referred to the CAPS III. Nevertheless, when the patients, for different reasons, do not attend these services, the psychiatric follow-up is often conducted in the family health unit. It is important to highlight that even when patients are referred, the Family Health Strategy is responsible for the coordination of care and attention of clinical comorbidities.

The identification of mental health cases is carried out by one of the team professionals, either the community health agent or the doctor, and the Family Health Strategy professionals are the ones who decide which patients need matrix support.

### **Presentation of the other services analyzed and the local health network**

The community population has 100% health coverage through the Family Health Strategy, with 25 teams distributed in three different units, one of which is the CMS R under study.

The mental health reference services of the Unified Health System (SUS, for its initials in Portuguese) for the community population are the following: the CAPS III (providing overnight admission beds), the outpatient psychiatry and psychology service of the CMS G, the Municipal Psychiatric Institute, and the CAPS for alcohol and other drugs and the CAPS for children and adolescents. The University Psychiatric Institute provides hospitalization and outpatient follow-up to

this population. Of all these services, only the CAPS III is located within the community.

The CAPS III was inaugurated in March 2010 and has received many patients since its inception, especially those coming from the Municipal Psychiatric Institute. It operates 24 hours a day and currently has nine overnight admission beds and offers individual and group care, a family approach, workshops, actions in the territory, home visits, participation in cultural and political events. The team of professionals is divided into sub-teams in accordance with the territories of reference in which the patients reside, thus facilitating communication with their families. Based on data from the Municipal Health Secretariat of Rio de Janeiro, up to December 31 2016, there were 852 registered patients and 483 followed-up patients in the CAPS III.

The CMS G is the psychiatry and psychology outpatient reference service of the studied community. However, the presence of psychiatry in outpatient care is quite recent, as there were periods when the unit did not include this specialty. The origins of the Municipal Psychiatric Institute are rooted in the creation in 1852 of the Pedro II Hospice, the first asylum in Latin America for mental health patients. In 2000, it ceased to be a federal unit and became a unit of the Municipal Health Secretariat.<sup>(24)</sup> In recent years, several changes have been made in order to materialize the Brazilian Psychiatric Reform. The psychiatry outpatient service started to refer its patients to the substitutive service network in 2011 and was officially closed in November 2014. The children and youth nucleus of the Institute was transformed into a CAPS for children and adolescents and, in 2016, a part of the hospital structure was assigned to become a CAPS III. At the beginning of 2018, the outpatient service and the inpatient wards of the alcoholism treatment unit were also closed. The number of beds in the inpatient wards has been reduced over the last few years. To date, urgent psychiatric care is still provided by the Municipal Psychiatric Institute, although for several years there have been plans to transfer it to a general hospital.

The University Psychiatric Institute was created in 1938 with the purpose of developing teaching, research, extension and assistance activities in the field of psychiatry and mental health. Its facilities currently include two inpatient wards, outpatient services for children, adolescents, adults and the elderly, a day hospital for adults with severe mental disorders and for patients with dementia, and a CAPS for children and adolescents. In 2006, the care unit for alcohol and other drug users was inaugurated. Several outpatient services are devoted to research, in addition to care provision.<sup>(25)</sup>

### Ethical aspects

This project was approved by the Ethics Committee of the Institute of Psychiatry of the Universidade Federal do Rio de Janeiro and by the Research Ethics Committee of the Municipal Health Secretariat of Rio de Janeiro (CAAE 59773416.3.3001.5279).

## RESULTS AND DISCUSSION

In addition to including data related to adherence and treatment of comorbidities, we here present the results and the discussion based on the two main questions of the research that we sought to answer in relation to access and changes in the care model: 1) Is the CMS R delivering care to patients diagnosed with schizophrenia and delusional disorders in its territory? and 2) Was there a transition from the hospital-centered model to a model based on community services as a result of the implementation in the territory of the Family Health Strategy, the family health support nuclei and the CAPS III?

### General characteristics of the patients

The 94 patients studied from the CMS R show an equal distribution between sexes, which agrees with the epidemiological surveys

analyzed by Mari and Leitão<sup>(26)</sup> that did not show any consistent differences in the prevalence of schizophrenia between sexes. In relation to age, most of the men were between 20 and 69 years old (99%) and among women, the concentration was higher in the age range between 20 and 69 years old, considering that 5% of the women were older than 69. With the aim of verifying whether the number of patients over 60 years of age with severe mental disorders was lower than expected, and, taking into account the number of general patients over 60 years old treated at the CMS R, the percentage of patients over 60 years old with severe mental disorders was compared with the percentage of patients over 60 in the entire municipal health center, finding 19% of the patients over 60 years of age with severe mental disorders compared to 43.4% of patients older than 60 years of age in general. Therefore, it was verified that there are fewer patients over 60 years of age with severe mental disorders than expected, demonstrating once again the early mortality of patients with severe mental disorders.<sup>(27,28)</sup>

### Access

Patients with schizophrenic and delusional disorders were selected from the registrations in the CMS R electronic medical record, finding 94 individuals aged 18 years or older, diagnosed with schizophrenia or delusional disorders classified in accordance with the ICD-10 under codes F20 to F29, which accounts for 0.82% of the adult population assigned to the CMS R, a percentage that is very close to the 1% described as the expected population prevalence in the literature on schizophrenia.<sup>(26)</sup> This value was higher than that found by Hetlevik *et al.*<sup>(27)</sup> in a study conducted in Norway, in which 0.4% of the patients in a group of individuals aged 25 to 60 years was diagnosed with schizophrenia by general practitioners.

With respect to the elapsed time between the onset of symptoms and the beginning of treatment of the 52 patients from whom it was possible to retrieve these data from the

medical records consulted in the five services of the mental health network, it was observed that, on average, this time was of 1.94 years, with a minimum of 0, that is, the treatment began the same year when the symptoms started, and a maximum of 18 years. The median was 0 years, with 57.7% of the patients treated in the same year when the symptoms occurred. These results are similar to those found by Naqvi *et al.*<sup>(29)</sup> in Pakistan: a duration of 14.8 months for untreated psychoses.

When analyzing the year of admission to the CMS R and the registration of the psychiatric diagnosis of the 94 individuals under study, it was observed that the average time between these two events was 1.12 years, with a minimum of 0 years and a maximum of 5 years, with a median of 1 year. Of the total, in 45.7% of the patients, the psychiatric diagnosis was registered in the same year.

### Patient follow-up in the health services

Of the 94 patients with schizophrenic or delusional disorders studied, all of them had their medical records in the municipal health center R, as the initial selection was conducted in this service. When tracking in the remaining services studied if these 94 patients already had medical records, and when they had consulted, a total of 219 medical records of these 94 patients distributed in the different studied services were collected; 66 of those 94 had already been treated at the Municipal Psychiatric Institute, 45 at the CAPS III, 12 at the University Psychiatric Institute and 2 at the CMS G. The distribution of the clinical records of the 94 patients of the CMS R in the remaining centers are shown in Table 1.

The data reveal the historical importance of the Municipal Psychiatric Institute in the care of people diagnosed with schizophrenia or delusional disorders: 70.2% of the 94 patients studied have a clinical history in that institution. It should be noted that, up to the time of this study, the Municipal Psychiatric Institute has continued to be the greatest psychiatric emergency facility in the program area, while 12.7% of the patients analyzed

Table 1. Number and proportion of clinical records of the patients at the CMS R (n=94), in the remaining health services used. Rio de Janeiro, Brazil, 2003-2016.

Health care service	Number of medical records (n)	Proportion of patients with medical records (%)
Municipal Psychiatric Institute	66	70.2
CAPS III	45	47.8
University Psychiatric Institute	12	12.7
CMS G	2	2.1

Source: Own elaboration.

CMS= Municipal Health Center; CAPS= Community Mental Health Centers

Note: Several patients have clinical records in more than one health care service.

have received some type of treatment at the University Psychiatric Institute, either hospitalization or outpatient follow-up, which reinforces the health care role provided by the psychiatric hospitals in the studied territory.

However, for better understanding the mental health care provided to the patients in this study, it is necessary to verify in which services the outpatient follow-up was performed (Table 2).

The community services already appear to be significantly relevant in psychiatric care, led by the Family Health Strategy in the CMS R, with a follow-up of 61.7% of the patients. The CAPS III follows up 47.8% of the patients, a number that is very close to the 49.0% of the Municipal Psychiatric Institute. The outpatient psychiatric service of the CMS G appears as the least used service, with only 2.1% of the cases, which suggests that this type of service does not play a relevant role in the care of patients suffering from severe mental disorders. However, it is only possible to verify if the hospital services are in fact being replaced by community services by changing the pattern of use of these services, if the evolution of this follow-up is analyzed over time, which will be addressed later in this study. However, it can be confirmed that the CMS R was the service that conducted the psychiatric follow-up of most of the patients in this study, accounting for 61.7% of the cases.

**Table 2. Number and proportion of patients with outpatient follow-up in the studied services. Rio de Janeiro, Brazil, 2003-2016. (n=94).**

Health Care Service	Number of patients with outpatient follow-up (n)	Proportion of patients with outpatient follow-up (%)
CMS R	58	61.7
Municipal Psychiatric Institute	46	49.0
CAPS III	45	47.8
University Psychiatric Institute	8	8.5
CMS G	2	2.1

Source: Own elaboration.

CMS= Municipal Health Center; CAPS= Community Mental Health Centers.

Note: Several patients have clinical records in more than one health care service.

## Clinical comorbidities

Despite knowing the fact that the life expectancy of individuals suffering from severe mental disease is more than 20 years lower than that of the general population, to date there is no clear information confirming that there is a better physical health prognosis for these patients in the community-centered services or that this disparity in mortality has decreased.<sup>(23)</sup> With the aim of analyzing the clinical care that has been provided in the municipal health care center R in relation to the patients of this research, specific clinical morbidities were chosen to verify whether they were treated in 2016. Table 3 shows that

most of the 72 patients of the CMS R with diagnosed clinical morbidities received treatment throughout 2016.

According to Schmidt *et al.*,<sup>(30)</sup> in the Brazilian general population the hypertension prevalence was 21.6% and 5.3 % that of diabetes, while, in Rio de Janeiro, these prevalence rates accounted for 24.8% and 5.9%, respectively. The proportion of hypertensive patients in the study was 28.9%, i.e., slightly higher than the prevalence of the general population. The proportion of patients diagnosed with diabetes was 11.1%, slightly higher than that in the general population. The proportion of patients diagnosed with diabetes was 11.1% –amounting to almost twice the prevalence in the general population– of which, 100% were receiving treatment in 2016, and almost all the individuals diagnosed with hypertension were in treatment. Pelletier *et al.*,<sup>(31)</sup> report that the patients diagnosed with schizophrenia have a higher risk of developing several clinical comorbidities, and relate it to lifestyle (lack of physical activity, alcoholism or tobacco use), delay in seeking medical care, limited access to primary care (partly due to lack of a comprehensive search and limited communication skills). Some authors highlight that the use of second-generation antipsychotics can cause or exacerbate various metabolic disorders.<sup>(27,32,33,34)</sup> In the study conducted by Hetlevik *et al.*,<sup>(27)</sup> 2.0% of the patients diagnosed with schizophrenia had been diagnosed with hypertension and, 8.5% with diabetes, which at that time was

**Table 3. Percentage of patients diagnosed and cared for at the CMS R (n=94) according to clinical comorbidity. Rio de Janeiro, Brazil, 2016.**

CMS R Patients	Hypertension (%)	Diabetes (%)	Dyslipidemia (%)	Obesity (%)	Other comorbidities (%)
Undiagnosed	70.9	88.8	91.7	94.4	44.4
Diagnosed and untreated	2.7	-	1.4	1.4	-
Diagnosed and treated	26.4	11.2	6.9	4.2	55.6

Source: Own elaboration.

CMS= Municipal Health Care Center.

3.5 times more than the general population of Norway. Mai *et al.*<sup>(35)</sup> reported a prevalence of 9.3% for diabetes and Folsom *et al.*,<sup>(36)</sup> 31% for hypertension and 14% for diabetes, percentages that were closer to those in this research study. In the study conducted by Hetlevik *et al.*,<sup>(27)</sup> the prevalence of both diseases in the general population were much lower than those found in Brazil. In a revision of the literature conducted by Mogadouro *et al.*<sup>(37)</sup> of articles on mortality and schizophrenia from 1997 to 2007, no data were found on arterial hypertension in people diagnosed with schizophrenia in Brazil.

The results for obesity and dyslipidemias were different: in 27 Brazilian cities investigated, the frequency of obese adults was 17.5%,<sup>(38)</sup> while the prevalence of any type of dyslipidemia in the study by Garcez *et al.*<sup>(39)</sup> in the total São Paulo population was 59.74%. These numbers are much higher than the rates of 5.4% and 8.2% found in this research study for obesity and dyslipidemias, respectively. This is probably due to having recorded these diagnoses not carefully enough, which does not necessarily mean that comorbidities were not being monitored or treated. Therefore, an investigation was conducted to find out whether the patients had been evaluated or not through physical and laboratory examinations depending on their comorbidities, if the patients with or without a diagnosis of hypertension had had their blood pressure checked in 2016, if those diagnosed with diabetes had been tested for requested blood glucose levels, if a lipid panel had been ordered to those patients with dyslipidemia and if the weight of those receiving a diagnosis of obesity or not had been recorded.

We found that, of the patients diagnosed with some clinical morbidity, 90.4% had blood pressure measurements, 87.5% had a blood glucose test, 83.3% had a lipid panel performed and 100% had their weights recorded. Among the patients without a diagnosed clinical morbidity, 31.3% had a blood pressure measurement, 34.3% had their blood sugar level measured, 33.3% had a lipid profile test performed, and 50% had been weighed.

Therefore, it was verified that most of the patients were evaluated and treated for these clinical comorbidities.

### The Psychiatric Reform in action in the studied community

We have already analyzed several characteristics of patient follow-up in each mental health service in the studied territory, and, we will now assess the transition from the hospital-centered model to the model based on community services proposed by the Psychiatric Reform. When analyzing the evolution of mental health follow-up, from the number of followed-up patients according to service through the period 2003-2016, an increasing number of patients with psychiatric follow-up has been observed since 2003, both in the Municipal Psychiatric Institute and in the University Psychiatric Institute. This number starts to decrease from mid-2008 to 2016, when the number of followed-up patients in psychiatric hospitals is close to zero. The implementation of the CAPS III in 2010 and the Family Health Strategy teams in the CMS R in 2011, is reflected in a growing number of follow-up cases by these services that, already in mid-2012, exceeded the number of patients of the Municipal Psychiatric Institute with outpatient monitoring. These results confirm the change in mental health public policy in Brazil, which starts to invest more in community services, exceeding hospital expenses from 2005 onwards.<sup>(40)</sup> It should be noted that the CMS G had scant participation in the care of the patients studied.

Another relevant piece of data in this analysis is the fact that, since 2013 onwards, the number of patients whose follow-up was conducted by the CMS R exceeded the number of patients of the CAPS III. Both services maintain a very close relationship, cases are shared in monthly face-to-face meetings, or are discussed over the cell phone and in WhatsApp groups, joint home visits and joint care. The numbers reflect this collaboration in health care: of the 49,145 follow-up days of the patients at the municipal health center

R, only 7,176 days, or 14.6% of the time, was conducted exclusively in the service.

### Evaluation of the model shift based on three indicators: treatment abandonment, hospitalization and emergency

#### Treatment abandonment

Treatment abandonment is an important indicator for evaluating the quality of services. Understanding the reasons that hinder or facilitate adherence to treatment enables to develop strategies to address the problem of treatment abandonment more effectively; treatment abandonment is defined here as a period of more than six months, in which the patients discontinued all contact with the service, either because they did not attend the consultations or because there were no home visits.

The abandonment rates per service (the average of the analysis period) with a 99% confidence interval were the following: CMS R 10.8%, CAPS III 14.1% and Municipal Psychiatric Institute 14.0%. Therefore, the abandonment rate for the CAPS III and the Municipal Psychiatric Institute is 1.4 higher than that of the municipal health center R.

If the observation period is taken as a whole (CMS R 46 months, CAPS III 69 months, Municipal Psychiatric Institute 110 months), the abandonment rate at the CMS R is significantly lower than those at the CAPS III ( $p < 0.000$ ) and the Municipal Psychiatric Institute ( $p < 0.000$ ). Moreover, the difference between the abandonment rates at the CAPS III and the Municipal Psychiatric Institute are not statistically significant ( $p = 0.4974$ ).

Thus, the characteristics that seem to be differential of the CMS R in the follow-up of individuals diagnosed with schizophrenia and delusional disorders, which make their abandonment rates to be lower than those of the other services, is the active search through home visits conducted by the Family Health Strategy, a closer relationship with the community and the role played by community health agents in providing care.<sup>(18)</sup> The CAPS

III must conduct the visits; however, its role in relation to the intervention at the time of a crisis, among others, frequently prevent them from doing so when necessary. It is important to highlight, as stated by Patel *et al.*,<sup>(41)</sup> that the rates of treatment abandonment of patients with schizophrenic disorders are high and adherence to follow-up in the health services is inadequate worldwide, regardless of their level of growth. Reneses *et al.*<sup>(42)</sup> report in their study that the abandonment rates of psychiatric services by outpatients range from 20% to 60%. This wide variation can be attributed to disagreements over the definitions of abandonment, to differences in sample composition, the places where the subject matter is analyzed and the study designs. In their work, the definition of abandonment was based on the patient's failure to contact the mental health service for more than six months. The rates found ranged from 28.9% to 51.4% in the four services studied.<sup>(42)</sup> Other studies reported abandonment rates within the range reported by Reneses *et al.*<sup>(42)</sup>: 39.2%<sup>(43)</sup>; 25.6%<sup>(44)</sup>, 37.6%<sup>(45)</sup>. The exception was Villeneuve *et al.*,<sup>(46)</sup> who in their meta-analysis that included 74 studies, obtained an abandonment rate of 13%. They also affirm that the rate observed is much lower than that of pharmacological treatment abandonment among these patients, which in several studies accounted for an average of 42%. Despite the disagreements to define treatment abandonment in the studies, it has been observed that the rates found in this research study are lower than those shown in the literature.

#### Hospitalizations

Data on hospitalizations were collected from the Municipal Psychiatric Institute and the University Psychiatric Institute, as well as the dates when the overnight admission service was used in the CAPS III, between 2003 and 2016, obtaining the results shown in the Table 4 below.

The CAPS III data show shorter periods in the overnight admission service, while the University Psychiatric Institute has longer

Table 4. Total number of hospitalizations, average and maximum length of stay according to service. Rio de Janeiro, Brazil, 2003-2016.

Health care services	Hospitalizations	
	Total number	Average length of stay (days)
CAPS III	95	5.8
Municipal Psychiatric Institute	115	27.1
University Psychiatric Institute	28	36.7

Source: Own elaboration.

CAPS= Community Mental Health Centers.

hospitalizations. With respect to the number of hospitalizations, although the CAPS III has a lower number of followed-up patients with regard to the Municipal Psychiatric Institute and higher than the University Psychiatric Institute, it is the most recently implemented service, with lower participation in the period analyzed; therefore, it is necessary to verify the number of hospitalizations over time.

Figure 1 shows the existence of three different patterns in the number of occupied

beds over time: from 2003 to 2006; from 2007 to 2012 and from 2013 to 2016. The first and third periods do not show statistically significant differences, that is, hospitalizations were not reduced after the implementation of community services, if the overnight admission service of the CAPS III is included among these hospitalizations. However, the differences between hospitalizations and the overnight admission service should be highlighted.

Already consolidated experiences indicate that the CAPS III, which operates 24 hours a day and has overnight admission beds, can provide care that helps avoid hospitalizations in most cases,<sup>(47)</sup> which was also demonstrated in this research study. The advantages of overnight admissions are many, namely: the continuity of care by the team under study; interventions that are more focused on the subject's integrity; shorter periods of separation from community life, stimulating the strengthening of community and interpersonal ties, with an emphasis on personal resources; and greater proximity to the territory, which facilitates visits by family members and other care-related professionals. The study by Ruud *et al.*<sup>(48)</sup> also reports that patients were

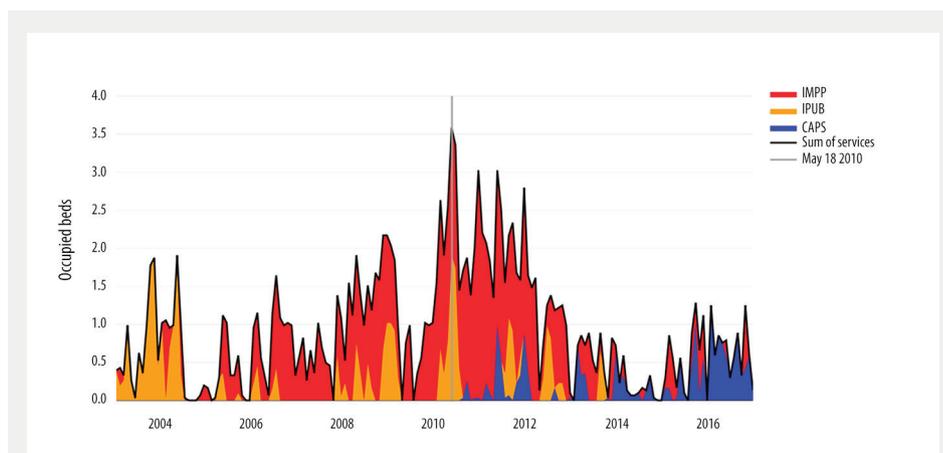


Figure 1. Number of occupied beds per day (monthly average) according to service (stacked areas). Rio de Janeiro, Brazil, 2003-2016.

Source: Own elaboration.

IMPP= Municipal Psychiatric Institute; IPUB= University Psychiatric Institute; CAPS= Community Mental Health Centers.

Note: The black outline represents the sum of occupied beds in the three services. The grey vertical line shows the date May 18, 2010, when the CAPS was inaugurated, which coincides with the day commemorating the anti-insane asylum fight (*o movimento antimanicomial*) in Brazil. The figure shows how after the inauguration of the CAPS there is a progressive reduction in admissions to the municipal psychiatric hospital.

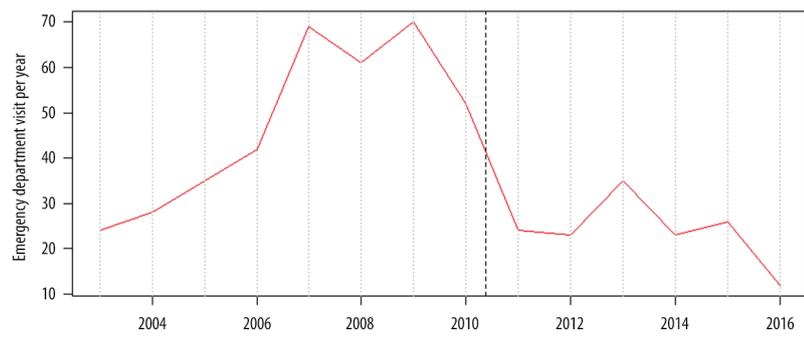


Figure 2. Number of emergency visits to the Municipal Psychiatric Institute per year. Rio de Janeiro, Brazil, 2003-2016.

Source: Own elaboration.

Note: Dotted lines represent the years. The dashed line marks the date May 18, 2010. Emergency department visit per year.

more satisfied with outpatient and local inpatient services than with hospitalization. Local hospitalizations in community services are likely to be similar to the overnight admission services in the CAPS III.

### **Emergencies**

The demand for the emergency service of psychiatric hospitals is an important indicator to assess whether the community services are managing to support their patients, preventing crises or helping to overcome them in the territory. Patient care in the psychiatric emergency department at the Municipal Psychiatric Institute was analyzed throughout the period 2003-2016, being observed that, between 2003 and 2009, the average demand of emergency care at the Municipal Psychiatric Institute was 47.0 and 27.8 between 2010 and 2016; therefore, there was a significant drop in the number of emergencies attended at the Municipal Psychiatric Institute from 2010 onwards. Figure 2 shows this reduction over the studied years.

It is important to note that, as already mentioned, it is difficult to think that community patients no longer visit the emergency department at the Municipal Psychiatric

Institute, given the fact that when an ambulance of the Mobile Emergency Care Service (Portuguese acronym, SAMU) is requested, the patient must be taken to that Institute. For a long time, patient follow-up was conducted "on an outpatient basis" in the emergency department at the Municipal Psychiatric Institute, until the service to which the patient would be finally referred was decided, as could be noted from the study of the medical records. Even so, based on the data available, it could be observed that there was a drastic reduction in attended emergencies, particularly in 2016 (Figure 2).

Therefore, it was found that the shift towards the community-centered service model consistently reduced the frequency of emergencies visits to the Municipal Psychiatric Institute, which may indicate that the territorial health network has managed to deal with the crises in its territory.

### **CONCLUSION**

From the analysis of the treatment trajectories of 94 patients suffering from schizophrenic and delusional disorders over a period of 14

years, through the data extracted from their clinical records in five different services, it was possible to demonstrate that there was indeed a shift from a psychiatric hospital-centered model to a model based on community services. The transition of models could have generated a period of relative instability in patient follow-up, causing an increase in hospitalizations, which should serve as a warning for the development of specific strategies for the implementation of this process. Despite this situation, it was evidenced that the local health network that was created in the community has promoted the clinical and psychiatric care of these patients. In 2016, only a very small number of patients was not followed up in any of the study services while, in recent years, most of them were followed-up at the CMS R and the CAPS III. The relevance of the care provided by the municipal health center R was especially highlighted, either in collaboration with the CAPS III or in its exclusive patient follow-up, which was superior to the exclusive follow-up of primary care services in the literature. Matrix support in mental health has qualified the teams of the Family Health Strategy for the detection and treatment of patients with schizophrenia. The lowest rates of treatment abandonment were found in the CMS R, which has important characteristics for enhancing treatment adherence, such as closer proximity to the people and resources of the community, greater frequency of active monitoring through home visits and the relationship existing between the community health agents and the patients. It was also found that long hospitalizations in psychiatric hospitals were effectively substituted by the overnight admission service of the CAPS III and that patients and their families no longer resort to the psychiatric emergency department at the Municipal Psychiatric Institute.

This research study is an investigation conducted in a very particular territory, characterized by great social vulnerability and intense urban violence. At the same time, it has a robust health network, with 100% coverage by the Family Health Strategy and the CAPS III located in the community, which facilitates

access. Therefore, further studies need to be conducted in different contexts.

The results obtained in this study reaffirm the importance of conducting quantitative analyses in mental health, which are usually scarce in the national literature. The Psychiatric Reform has advanced in recent years both in Rio de Janeiro as well as throughout Brazil, and, we still have insufficient evidence of its impact on the care of patients suffering from severe mental disorders. Therefore, further research is needed and the quality of the service records should be improved, so that the relevant information can be more easily obtained and more systematically evaluated, thus improving the quality of the follow-up conducted by the professionals and providing more elements for more effective public policy making adapted to the different Brazilian realities. A more active participation of the universities in quantitative research on the evaluation of services and public policies could contribute to this field of study.

The development of the psychosocial care network in the studied community made it possible to replace psychiatric hospitals and to deal with mental health crises in the territory. The closing of the Municipal Psychiatric Institute and the University Psychiatric Institute did not imply lack of medical attention, as more important than closing psychiatric hospitals is to offer a network of services in the territory that promotes mental health and care. This study also highlights the fundamental role of the Family Health Strategy in the follow-up of patients with schizophrenic disorders. In order to expand the Psychiatric reform, one of the central points should be to invest in Family Health units.

### Study limitations

The main limitation of this study is the fact that it was conducted in a very particular and specific territory, at a very favorable time for the implementation of the Family Health Strategy, of a type III community mental health center (with overnight admission beds) and a family health support nucleus that included a female

psychiatrist that was very committed with the matrix support process (joint consultations of the specialist female psychiatrist with the Family Health Strategy team). Therefore, taking the above into account, these results cannot be replicated or extrapolated to other territories.

## ACKNOWLEDGMENT

We would like to thank Eduardo Marinho Filho (in memoriam) for his great collaboration in data organization and analysis, as well as the preparation of tables and graphs. We are also grateful to the entire faculty of the Professional Master's Program in Psychosocial Care at IPUB, whose feedback was indeed invaluable to complete this research study.

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#### CITATION

Thiesen J, Fortes S, Cavalcanti MT. The impact of territorial care on the treatment of individuals diagnosed with schizophrenia and delusional disorders in a community in Rio de Janeiro. *Salud Colectiva*. 2021;17:e3020. doi: 10.18294/sc.2021.3020.

Received: 23 Jul 2020 | Modified: 1 Dec 2020 | Accepted: 26 Jan 2021 | Published online: 17 Mar 2021



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<https://doi.org/10.18294/sc.2021.3020>

This article was translated by Victoria Illas.