



## Original article

# Drug utilization research in a primary mental health service in Northeast of Brazil

Thais Teles de Souza<sup>a</sup>, Wellington Barros da Silva<sup>b</sup>,  
Jullyana de Souza Siqueira Quintans<sup>c</sup>, Alexandre Sherlley Casimiro Onofre<sup>d</sup>,  
Fabiana Botelho de Miranda Onofre<sup>d</sup>, Lucindo José Quintans-Júnior<sup>e,\*</sup>

<sup>a</sup> Programa de Pós-graduação em Ciências Farmacêuticas, Universidade Federal do Paraná, Brazil

<sup>b</sup> Departamento de Fisiologia, Universidade Federal de Sergipe, Brazil

<sup>c</sup> Campus de Ciências da Saúde de Lagarto, Universidade Federal de Sergipe, Brazil

<sup>d</sup> Departamento de Fisiologia, Universidade Federal de Sergipe, Brazil

<sup>e</sup> Departamento de Fisiologia, Universidade Federal de Sergipe, Brazil

## ARTICLE INFO

### Article history:

Received 30 May 2011

Accepted 20 March 2012

Available online 15 May 2012

### Keywords:

Psychosocial care center

Drug utilization research

Mental health

## ABSTRACT

The Psychosocial Care Center (CAPS) is a community-based mental health service in Brazil, which aims to promote the psychosocial rehabilitation of patients. Accordingly, this study describes the drug use evaluation in a primary mental health service in Northeast of Brazil. **Setting:** CAPS 'Valter Correia', São Cristóvão, Sergipe, Brazil.

**Methods:** A cross-sectional study was conducted between August 2009 and May 2010. Initially, Medical records were reviewed and evaluated. Then, we applied interviews with the patients (and/or their informal/family caregivers) attended at the CAPS. Informations were obtained regarding to demographic and clinical features, diagnoses and drugs prescribed. All patients registered in the CAPS were included in the study. The results were statistically analyzed using the EpiInfo and were compared with results from literature.

**Results:** The CAPS 'Valter Correia' consists of 101 registered patients, the majority were male (58.4%), illiterate (51.5%), without monthly income (49.5%) and the average age of them 42.2 years (SD = 12.0). Schizophrenia was the most frequent mental disorder (31.5%). The average number of medications by patients was 3.11 (SD = 1.41), and the older group of patients (75-80 years) presented the largest consumption of medications (5.50 drugs/patient). The psychiatric drug class most frequently prescribed was antipsychotics (44.8%). Angiotensin-converting enzyme inhibitors were the most prevalent non-psychiatric therapeutic class (15.8%). It was detected 133 drug-drug interactions (3.0% mild, 54.1% moderate, 29.3% severe and 13.5% contraindicated).

**Conclusion:** The results revealed the need for monitoring the pharmacotherapy of patients with mental disorders to encourage the rational use of medications.

© 2011 Escola Nacional de Saúde Pública. Published by Elsevier España, S.L. All rights reserved.

\* Corresponding author.

E-mail addresses: lucindo.jr@yahoo.com.br, lucindo@pq.cnpq.br (L.J. Quintans-Júnior).

0870-9025/\$ – see front matter © 2011 Escola Nacional de Saúde Pública. Published by Elsevier España, S.L. All rights reserved.

doi:10.1016/j.rpsp.2012.03.001

## Estudo de utilização de medicamentos em um serviço de saúde mental primário no Nordeste do Brasil

### RESUMO

#### Palavras chave:

Centro de Atenção Psicossocial  
Estudo de Utilização  
de medicamentos  
Saúde Mental

O Centro de Atenção Psicossocial (CAPS) é um serviço de saúde mental de base comunitária no Brasil, que visa promover a reabilitação psicossocial dos pacientes. O presente estudo descreve a avaliação do uso de medicamentos em um serviço de saúde mental primário no Nordeste do Brasil.

*Ambiente:* CAPS «Valter Correia», São Cristóvão, Sergipe, Brasil.

*Métodos:* Estudo transversal foi realizado entre agosto de 2009 e maio de 2010. Inicialmente, os registros médicos foram revisados e avaliados. Em seguida, foram realizadas entrevistas com os pacientes (e/ou seus cuidadores) atendidos no CAPS. Informações foram obtidas sobre as características demográficas e clínicas, diagnósticos e medicamentos prescritos. Todos os pacientes cadastrados no CAPS foram incluídos no estudo. Os resultados foram analisados estatisticamente utilizando o programa EpiInfo e foram comparados com os resultados da literatura.

*Resultados:* O CAPS “Valter Correia” é composto por 101 pacientes cadastrados, a maioria do sexo masculino (58,4%), analfabetos (51,5%), sem renda mensal (49,5%) e a média de idade deles era de 42,2 anos (DP = 12,0). A esquizofrenia foi o transtorno mental mais freqüente (31,5%). O número médio de medicamentos por pacientes foi de 3,11 (DP = 1,41), e o grupo de pacientes mais velhos (75-80 anos) apresentou o maior consumo de medicamentos (5,50 medicamentos/paciente). A classe de medicamentos psiquiátricos mais prescrita foi a dos antipsicóticos (44,8%). A classe dos inibidores da enzima conversora da angiotensina foi a mais prevalente classe não-psiquiátrica (15,8%). Foram detectadas 133 interações medicamentosas fármaco-fármaco (3,0% de severidade leve, 54,1% moderada, 29,3% grave e 13,5% contra-indicada).

*Conclusão:* Os resultados demonstram a necessidade de acompanhamento da farmacoterapia de pacientes com transtornos mentais para incentivar o uso racional de medicamentos.

© 2011 Escola Nacional de Saúde Pública. Publicado por Elsevier España, S.L. Todos os direitos reservados.

## Introduction

Mental disorders represent a health problem of social relevance for their high incidence in populations from different countries and culturally distinct societies. We estimated 17–35% prevalence of mental disorders in Brazilian population. However, these disorders are still far from receiving an adequate importance.<sup>1-4</sup>

In this context, the introduction of psychosocial care centers (CAPS) were one of some health services created, based on Brazilian psychiatric reform. The CAPS are characterized by a day care service, which is proposed as an alternative to a psychiatric hospital. Its main objective is to offer a psychosocial rehabilitation to their patients.<sup>5</sup>

The sociodemographic characteristics of CAPS patients have an important influence to improve their assistance.<sup>2,6</sup> Moreover, psychotropic drugs cause adverse events, which compromises the adherence to treatment and then the quality of life.<sup>7</sup>

Some studies have demonstrated the relationship between the process of use of drugs, morbidity and mortality related to drugs and as these may trigger adverse reactions. In these studies, problems such as adverse reactions, non-compliance, overdose or inadequate therapy are factors that lead to failure of therapy. If this is not detected and resolved, it can lead to death.<sup>8-15</sup>

Thus, it is necessary to evaluate the drug utilization in mental health care in order to assess drug therapy, detect the risk factors associated with the use of medications and promote the rational use of drugs. Drug utilization research are defined, according to WHO, as studies on marketing, distribution, prescription, and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences. These studies have as their main objective the promotion of the rational use of drugs.<sup>16,17</sup>

In recent years, literature has highlighted the involvement of the pharmacist in programs to optimize the effects of medications, through monitoring the use of drugs. The application of rational criteria can ensure greater compliance with therapy, effectiveness and safety of medications used by patients.<sup>18-20</sup>

## Aim of study

The present study aimed to evaluate the use of medications by patients in a primary mental health service located in a city at the Northeast of Brazil.

## Methods

We conducted, in an unprecedented way in Sergipe state, a cross-sectional study between August 2009 and May 2010 at a

type I psychosocial care center (CAPS) 'Valter Correia' in São Cristovão, Sergipe, Brazil. All patients registered in the CAPS (and/or their informal/family caregivers) were included in the study.

CAPS type I is a unit for own psychosocial care with therapeutic workshops and other forms of care and operational capacity to provide healthcare coverage to a population between 20,000 and 70,000 inhabitants, working under two shifts, developing daily activities in mental health.<sup>21</sup>

Data was collected from patient medical records, such as sociodemographics, clinical characteristics and pharmacological treatments. Sociodemographic data included patient gender, age, educational status, occupational activity, benefits or pensions, income and marital status. Diagnoses (according to the ICD-10 international classification of mental and behavioral disorders)<sup>22</sup> and the patient's psychiatric admission history were the clinical characteristics obtained. Details of all psychiatric prescribed medications were also collected, including dose, frequency, administration routes and therapeutic indications. Drugs were classified according to the anatomical therapeutic chemical (ATC) classification system and the defined daily dose (DDD). The ATC/DDD system is a widely used tool for exchanging and comparing data on drug consumption at international, national or local levels.<sup>23</sup>

In addition, personal interviews were performed (applied to the patients and/or their informal/family caregivers) and collective interviews (applied to groups of patients and/or their informal/family caregivers), in order to compare informations registered on records, collect the missing data on records, identify features on the use of medications and characterize the perception of patients about their health problems and their treatments. The interviews were conducted by a graduate student in pharmacy, previously trained.

The protocols were approved by the Ethics Committee on Human Research at the Federal University of Sergipe. Patients participating in the study were informed about every step and agreed to participate in the survey through a term of informed consent.

The programs EPI-INFO (version 3.5.1-obtained from [www.cdc.gov/EpiInfo](http://www.cdc.gov/EpiInfo)) and Excel (Microsoft®) were used to statistical analysis. The study protocol was approved by the Ethics Committee of Federal University of Sergipe.

During the development of this study, it was ministered lectures, home visits, workshops and meetings for patients, informal/family caregivers, and for the multidisciplinary team of the CAPS. The themes approached the rational use of medications, mental disorder, psychopharmacology, medicinal plants, hygiene, handicraft, culture, integration, social inclusion, first aid and use of alcohol, tobacco and others drugs.

## Results

101 registered patients were distributed in intensive (13.86%), semi-intensive (52.48%) and non-intensive (33.66%) regime at CAPS Valter Correia. Those regimes are defined by their clinical conditions, based on clinical care and therapy of patients. According to their needs, patients belonging to intensive regime require daily care by a specialized multidisciplinary

**Table 1 – Sociodemographics data of patients attended at CAPS Valter Correia (n = 101).**

Variables	AF (RF%)*
<i>Gender</i>	
Male	59 (58.40)
Female	42 (41.60)
<i>Educational status</i>	
Analphabet	52 (51.50)
Uncompleted primary school	36 (35.60)
Primary school	1 (0.99)
Uncompleted secondary school	8 (7.90)
Secondary school	4 (3.96)
<i>Occupational activity</i>	
None	91 (90.10)
Housemaid	1 (0.99)
Homemaker	4 (3.96)
Bricklayer	2 (1.98)
Fishman	3 (2.97)
<i>Benefit/pensions</i>	
Receive	51 (50.50)
No receive	50 (49.50)
<i>Income (monthly)</i>	
No income	50 (49.50)
1 minimum wage (\$ 28,736)	49 (48.50)
2 minimum wage (\$ 57,471)	1 (0.99)
3 minimum wage (\$ 86,207)	1 (0.99)
<i>Marital status</i>	
Single	77 (76.20)
Married or living as married	17 (16.80)
Divorced	2 (1.98)
Widowed	5 (4.95)

\* AF – Absolute frequency, RF% – Relative frequency in percentage.

team (up to 25 days/month), patients belonging to semi-intensive regime require frequent care (up to 12 days/month) and patients belonging to non-intensive regime require less frequent attendance (up to 3 days of the month).

The mean age of patients was  $42.18 \pm 12.01$ -years-old, median of 42 years. Table 1 describes the distribution of other important socio-demographic parameters.

Schizophrenia was the most prevalent mental disorder (31.53%). The mental disorder profile presented by the patients attended on the CAPS, according with the international classification of mental and behavioral disorders (ICD-10)<sup>22</sup> is described in Table 2.

Some patients presented other diseases associated to mental disorders, such as arterial hypertension (18.81%), diabetes mellitus (10.9%), gastritis (10.9%), asthma (4.0%), others heart problems (7.9%) and hypothyroidism (2.2%).

Regarding to the pharmacotherapeutic profile, Table 3 exhibits the therapeutic classes of psychiatric drugs used by patients attended at CAPS. Table 4 describes the therapeutic classes of non-psychiatric drugs used by patients attended at CAPS, according to the WHO-ATC/DDD methodology. The psychiatric drug class most frequently prescribed was antipsychotics (44.8%) and the non-psychiatric drug class most prevalent was angiotensin-converting enzyme inhibitors (15.8%).

**Table 2 – Mental disorders diagnosed at CAPS patients according to ICD-10 (n = 101).**

ICD	Mental disorders	AF (RF%) <sup>a</sup>
F06	Other mental disorders due to brain damage and dysfunction and to physical disease	5 (4.50)
F10	Mental and behavioural disorders due to use of alcohol	20 (18.02)
F20	Schizophrenia	35 (31.53)
F21	Schizotypal disorder	3 (2.70)
F25	Schizoaffective disorders	3 (2.70)
F29	Unspecified nonorganic psychosis	8 (7.21)
F31	Bipolar affective disorder	7 (6.31)
F32	Depressive episode	1 (0.90)
F71	Moderate mental retardation	9 (8.11)
F72	Severe mental retardation	4 (3.60)
G40	Epilepsy	4 (3.60)
	Others	12 (10.81)
Total		111 (100) <sup>b</sup>

<sup>a</sup> AF – Absolute frequency, RF% – Relative frequency in percentage.

<sup>b</sup> It is observed that some patients have more than one mental disorder.

**Table 3 – Therapeutic classes of psychotropic drugs used by patients attended at CAPS Valter Correia, according to ATC classification.**

ATC	Therapeutic class	AF (RF%) <sup>*</sup>
N03A	ANTIPILEPTICS	26 (9.63)
N03AA	Barbiturates and derivatives	12 (4.44)
N03AB	Hydantoin derivatives	2 (0.74)
N03AE	Benzodiazepine derivatives	8 (2.96)
N03AF	Carboxamide derivatives	16 (5.93)
N04A	ANTICHOLINERGIC AGENTS	18 (6.67)
N04AA	Tertiary amines	18 (6.67)
N05A	ANTIPSYCHOTICS	121 (44.81)
N05AA	Phenothiazines with aliphatic side-chain	46 (17.04)
N05AC	Phenothiazines with piperidine structure	6 (2.22)
N05AD	Butyrophenone derivatives	65 (24.07)
N05AN	Lithium	2 (0.74)
N05AX	Other antipsychotics	2 (0.74)
N05B	ANXIOLYTICS	22 (8.15)
N05BA	Benzodiazepine derivatives	22 (8.15)
N06A	ANTIDEPRESSANTS	23 (8.52)
N06AA	Non-selective monoamine reuptake inhibitors	16 (5.93)
N06AB	Selective serotonin reuptake inhibitors	7 (2.59)
R06A	ANTIHISTAMINES FOR SYSTEMIC USE	43 (15.93)
R06AD	Phenothiazine derivatives	43 (15.93)
V03A	ALL OTHER THERAPEUTIC PRODUCTS	5 (1.85)
V03AA	Drugs for treatment of chronic alcoholism	5 (1.85)
Total		219 (100)

\* AF – Absolute frequency, RF% – Relative frequency in percentage.

**Table 4 – Therapeutic classes of non-psychotropic drugs used by patients attended at CAPS Valter Correia, according to ATC classification.**

ATC	Therapeutic class	AF (RF%) <sup>*</sup>
A02B	Drugs for treatment of peptic ulcer	3 (7.89)
A04A	Antiemetics and antinauseants	2 (5.26)
A06A	Laxatives	2 (5.26)
A07D	Antipropulsives	1 (2.63)
A10B	Oral blood glucose lowering drugs	1 (2.63)
B03A	Iron preparations	1 (2.63)
B03B	Vitamin B12 and folic acid	2 (5.26)
C01D	Vasodilators used in cardiac diseases	1 (2.63)
C02A	Antiadrenergic agents, centrally acting	1 (2.63)
C03A	Low-ceiling diuretics, thiazides	1 (2.63)
C03C	High-ceiling diuretics	1 (2.63)
C07A	Beta blocking agents	3 (7.89)
C09A	Ace inhibitors, plain	6 (15.79)
C09C	Angiotensin II antagonists, plain	1 (2.63)
G03A	Hormonal contraceptives for systemic use	1 (2.63)
G03G	Gonadotropins and other ovulation stimulants	1 (2.63)
G04B	Other urologicals, incl. antispasmodics	1 (2.63)
H02A	Corticosteroids for systemic use, plain	1 (2.63)
M03A	Muscle relaxants, peripherally acting agents	3 (7.89)
R03A	Adrenergics, inhalants	1 (2.63)
R03C	Adrenergics for systemic use	1 (2.63)
R03D	Other anti-asthmatics for systemic use	1 (2.63)
R05C	Expectorants, excl. combinations with cough suppressants	1 (2.63)
R06A	Antihistamines for systemic use	1 (2.63)
Total		38 (100)

\* AF – Absolute frequency, RF% – Relative frequency in percentage.

The average number of medications (psychotropic and non-psychotropic) used by patients was  $3.11 \pm 1.41$  medications/patients, median 3 (Table 5).

Table 6 shows the percentage of drug interactions presented by patients of the CAPS, according to the degree of severity.

With respect to consumption of other substances, it is observed in Table 7 the profile of use alcohol, tobacco, illicit drugs and teas.

## Discussion

The CAPS is an open and community service of mental health on the unified health system (SUS) in Brazil. Its main objective is to establish a reference place to treatment for people with mental disorders, who need an intensive care related to their severity and/or persistence demand.<sup>5</sup>

101 registered patients at CAPS 'Valter Correia' were distributed in intensive (13.86%), semi-intensive (52.48%) and non-intensive (33.66%) regime. The average age of patients was  $42.18 \pm 12.01$  years. These results were in concordance by



**Table 5 – Mean number of medications (psychotropic and non-psychotropic) used by patients attended at CAPS Valter Correia, according to the age group.**

Age group (years)	Average amount of medications used/patient
20–24	2.33 ± 1.21
25–29	3.89 ± 1.17
30–34	2.82 ± 1.01
35–39	2.62 ± 0.96
40–44	2.91 ± 1.20
45–49	2.70 ± 1.42
50–54	3.88 ± 1.96
55–59	3.50 ± 0.71
60–64	3.00 ± 0.71
65–69	3.00 ± 0.00
70–74	3.00 ± 0.00
75–80	5.50 ± 0.00

Values are expressed as mean ± standard deviation.

**Table 6 – Drug interactions (drug–drug) presented by patients attended at CAPS Valter Correia, classified by degreed severity.**

Type of interaction	AF (RF%)*
Light	4 (3.01%)
Moderate	72 (54.13%)
Severel	39 (29.32%)
Contraindicated	18 (13.54%)
Totally	133 (100%)

\* AF – Absolute frequency, RF% – Relative frequency in percentage.

**Table 7 – Consume of alcohol, tobacco, coffee, illicit drugs and tea by patients attended at CAPS Valter Correia.**

Substances	Consume	AF (RF%)*
Alcohol	<2 cups/week	1 (0.99)
	>6 cups/week	18 (17.82)
	2–6 cups/week	4 (3.96)
	Sporadically	1 (0.99)
	Do not consume	76 (75.25)
	Trying to stop	1 (0.99)
Tobacco	<1 wallet/day	15 (14.85)
	>1 wallet/day	23 (22.77)
	Does not consume	63 (62.38)
Coffee	<2 cup/day	17 (16.83)
	>6 cups/day	8 (7.92)
	2–6 cups/day	20 (19.80)
	Sporadically	36 (35.64)
	History of dependence	5 (4.95)
	Do not consume	14 (13.86)
Illicit drugs	Trying to stop	1 (0.99)
	>6 times/week	1 (0.99)
	2–6 times/week	1 (0.99)
	Sporadically	2 (1.98)
	History of dependence	2 (1.98)
Tea	Do not consume	95 (94.06)
	<2 cups/day	10 (9.90)
	>2 cups/day	9 (8.91)
	Sporadically	46 (45.54)
	Do not consume	36 (35.64)

\* AF – Absolute frequency, RF% – Relative frequency in percentage.

other studies, which claim that mental disorders affect people of all ages, with the prevalence on 30–49 years.<sup>24,25</sup> The presence of mental disorder at this age group influences the way of life, interrupting productivity as a result of disability caused by disease.<sup>24</sup>

It is observed in Table 1 that the CAPS consisted mainly of male patients (58.50%), which differs from others studies that indicate the prevalence of females.<sup>24,26</sup>

Most patients were single (76.20%), childless (54.50%), illiterate (51.50%), without occupation (90.10%), without benefits (49.50%) and without monthly income (49.50%). These results suggest that the presence of mental disorder can influence the cultural background of people and the chance to attend school is low, which can make it difficult to enter at university and gain a good job. According to OMS (2001)<sup>2</sup>, five from ten causes of inability on the world are mental disorder.

Regarding to the nosological profiles, Table 2 reveals that there are patients with more than one type of mental disorder and that schizophrenia is the most prevalent mental disorder (31.53%).

Schizophrenia is one of the most serious neuropsychiatric diseases and affects about 1% of world population. Currently, there is no specific prevention for this disease. Neuroleptic or antipsychotic drugs are used as the primary treatment for all stages of the disease.<sup>27</sup>

Depressive episodes are common mental disorders on Brazilian population,<sup>28–31</sup> but we found in only 0.90% of our CAPS patients. This difference should be caused due to the introduction of a new model of psychiatric care, which is still suffering transition in Brazil. Part of the population, who suffers from mood and anxiety disorders, is probably under-diagnosed. Another part, even receiving the correct medical diagnosis, chooses to receive ambulatory treatment without resort to the CAPS, which could be in consequence of stigmas fear.

Consumption of alcohol and others drugs is an important cause of disorder. Mental behavioral disorders due the consumption of alcohol were found in 18.02%, due the consumption of multiple drugs and others psychoactive substances in 0.90% and due to the use of cocaine in 0.90%. Those patients should be indicated for an AD type of CAPS.

The psychiatric drug class most frequently prescribed was antipsychotics (44.8%), described in Table 3. Angiotensin-converting enzyme inhibitors (ACEI) were the most prevalent non-psychiatric drug class (15.8%) (Table 4). Those results are in consistence with the most prevalent diseases, schizophrenia for antipsychotics and hypertension for ACEI medications.

There is currently a very large number of antipsychotic medications, with different profile of side effects, but with similar potency when use in equivalent doses. However, there are individual differences on efficacy, tolerance and cost. Particular context should be used to choose the adequate drug.

The average number of medications used by patients was 3.11 ± 1.41 medications/patients. The largest consumption of medications was found in the 75–80 years group, 5.5 medications for patient (Table 5). These data are in with the literature. Elderly population is marked by a higher frequency of chronic degenerative diseases. It has greater demand for health services and medication, which predisposes the geriatric

population to great risks with the practice of polypharmacy and adverse effects of medications.<sup>32</sup>

In regard to drug interactions,<sup>33-35</sup> 3.0% mild, 54.1% moderate, 29.3% severe and 13.5% contraindicated (Table 6). Those results demonstrate the need to evaluate possible interventions, since drug interactions may, among other things, increase undesired medications effects, lead to ineffective therapy and endanger the life of patient.<sup>36-39</sup>

It is observed in Table 7 that 24.75% of patients consumed alcohol, 37.62% tobacco, 86.14% caffeine, 5.94% illicit drugs and 64.36% tea. It is necessary a further detailed study, since these substances can interact with several medications.

The medications have an important role in the health system, they can save lives or remove the signs and symptoms of numerous diseases.<sup>40</sup> However, the drugs may increase the costs of health care if used improperly.<sup>41</sup> According to WHO data, hospitals spend 15%–20% of their budgets to deal with the complications caused by misuse of medications.<sup>42</sup>

In this context, pharmacists are professionals who can actively participate in the multidisciplinary team, make the management of pharmacotherapy, assess the use of medications, provide guidelines and perform pharmacotherapeutic monitoring of patients, which contribute to the rational use of medications and improve the quality of life of patients.<sup>43</sup>

## Conclusion

Our results revealed the need for monitoring the pharmacotherapy of patients with mental and behavioral disorders to encourage the rational use of medications. This monitoring is necessary, since these patients are polymedicated, have other comorbidities, and use drugs that cause adverse effects, which compromise the adherence of treatment and consequently their quality of life.

## Conflicts of interest

The authors have no conflicts of interest to declare.

## Acknowledgments

We would like to thank the Fundação de Apoio à Pesquisa e à Inovação Tecnológica do Estado de Sergipe/FAPITEC-SE and National Council of Technological and Scientific Development (Conselho Nacional de Desenvolvimento Científico e Tecnológico/CNPq/Brazil) for the fellowship support.

## REFERENCES

- Alves DSN. Reestruturação da atenção em saúde mental: situação atual: diretrizes e estratégias. In: Amarante P, editor. *Psiquiatria social e reforma psiquiátrica*. Rio de Janeiro: Fiocruz; 1994. p. 197–204.
- Organização Pan-Americana de Saúde. Organização Mundial da Saúde. Relatório sobre a saúde no mundo de 2001: Saúde mental: nova concepção, nova esperança. Geneva: OPAS; 2001.
- Pinheiro KAT, Horta BL, Pinheiro RT, Horta LL, Terres NG, Silva RA. Common mental disorders in adolescents: a population based cross-sectional study. *Rev Bras Psiquiatr*. 2007;29:241–5.
- Lima MCP, Menezes PR, Carandina L, Cesar CLG, Barros MBA, Goldbaum M. Transtornos mentais comuns e uso de psicofármacos: impacto das condições socioeconômicas. *Rev Saúde Pública*. 2008;42:717–23.
- Ministério da Saúde. Minuta Portaria NAPS/CAPS, de 02 de December de 1999, Brasília, DF: Ministério da Saúde; 1999.
- Tavares M, Takeda S. Organização de Serviços de Atenção Primária de Saúde. In: Ducan BB, Schmidt MI, Pankow JS, editors. *Medicina ambulatorial: condutas clínicas em atenção primária*. 2nd ed. Porto Alegre: Artes Médicas; 1996. p. 2229.
- Lara DR, Abreu PB. Esquizofrenia. In: Kapczinski F, Quevedo J, Izquierdo I, editors. *Bases biológicas dos transtornos psiquiátricos*. Porto Alegre: Artmed; 2000. p. 109–17.
- Bates DW, Cullen DJ, Laird N, Petersen LA, Small SD, Servi D, et al. Incidence of adverse drug events and potential adverse drug events. *JAMA*. 1995;274:29–34.
- Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. *Am J Hosp Pharm*. 1990;47:533–43.
- Ernst FR, Grizzle AJ. Drug-related morbidity and mortality: updating the cost-of-illness model. *J Am Pharm Assoc (Wash)*. 2001;41:192–9.
- Hafner JWJR, Belknap SM, Squillante MD, Bucheit KA. Adverse drug events in emergency department patients. *Ann Emerg Med*. 2002;39:258–67.
- Morris CJ, Cantrill JA, Hepler CDP. Preventing drug related morbidity: determining valid indicators. *Int J Qual Health Care*. 2002;14:183–98.
- Dall'Agnol RSA. Identificação e quantificação dos problemas relacionados com medicamentos em pacientes que buscam atendimento no serviço de emergência do HCPA. Porto Alegre: Universidade Federal do Rio Grande do Sul. Faculdade de Farmácia; 2004. Dissertação de Mestrado em Ciências Farmacêuticas.
- Spina E, Santoro V, D'Arrigo C. Clinically relevant pharmacokinetic drug interactions with second-generation antidepressants: an update. *Clin Ther*. 2008;30:1206–27.
- Villa TCS, Brunello MEF, Arcêncio RA, Sassaki CM, Assis EG, Gonzalez RIC. Fatores preditivos aos resultados desfavoráveis no tratamento da tuberculose: revisão integrativa da literatura (2001-2005). *Online Brazilian Journal of Nursing*. Special number for undergraduate researches [Internet]. 2008 Spring [access 27 April 2011]. Available at: <http://www.objnursing.uff.br/index.php/nursing/issue/view/12>
- Laporte JR, Tognoni G. *Principios de epidemiología del medicamento*. 2nd ed. Barcelona: Masson-Salvat; 1993.
- Leite SN, Vieira M, Veber AP. Estudos de utilização de medicamentos: uma síntese de artigos publicados no Brasil e América Latina. *Ciênc Saúde Coletiva*. 2008;13:793–802.
- Brook O, Hout H, Nieuwenhuys H, Heerdink E. Impact of coaching by community pharmacists on drug attitude of depressive primary care patients and acceptability to patients: a randomized controlled trial. *Eur Neuropsychopharmacol*. 2003;13:1–9.
- Granados FM, Yangüas EP. Criterios de optimización de la terapia antipsicótica: margen terapéutico. *Farm Hosp*. 2004;28:214–24.
- Costa LF, Sousa LG, Oliveira AM, Fonseca CA. Atenção farmacêutica para portadores de cuidados especiais. *REF*. 2006;3:19–21.
- Ministério da Saúde. Portaria 336/GM, de 19 de February de 2002, Brasília, DF: O Ministério; 2002.
- World Health Organization. *The ICD-10 Classification of Mental and Behavioural Disorders: diagnostic criteria for research*. Geneva: WHO; 1993.
- World Health Organization. *The Anatomical Therapeutic Chemical (ATC) classification system and the Defined Daily*

- Dose (DDD) [access: 10 February 2012]. Available at: <http://www.whooc.no/atc.ddd.index/>.
24. Machado VMMC. Atuação do enfermeiro junto aos usuários do centro de atenção psicossocial CAPS geral na cidade de Sobral - CE. Ceará: Universidade Estadual Vale do Acaraú (UVA); 2006. Monografia de Especialização em Saúde Mental.
  25. Cardoso L, Galera SAF. Doentes mentais e seu perfil de adesão ao tratamento psicofarmacológico. *Rev Esc Enferm USP*. 2009;43:61-7.
  26. Pelisoli CL, Moreira AK. Caracterização epidemiológica dos usuários do Centro de Atenção Psicossocial Casa Aberta. *Rev Psiquiatr Rio Gd Sul*. 2005;27:270-7.
  27. Pádua AC, Gama CS, Lobato MI, Abreu PB. Esquizofrenia: diretrizes e algoritmo para o tratamento farmacológico. In: Cordiolo AV, et al., editors. *Psicofármacos: consulta rápida*. Porto Alegre: Artmed; 2005. p. 343.
  28. Regier DA, Narrow WE, Rae DS. The de facto US mental and addictive disorders service system: epidemiologic catchment area prospective 1 year prevalence rates of disorders and services. *Arch Gen Psychiatry*. 1993;50:85-94.
  29. Kessler RC, Mcgonagle KA, Zhao S, Nelson CB, Hughes M, Eshleman S, et al. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States. *Arch Gen Psychiatry*. 1994;51:8-19.
  30. Jenkins R, Lewis G, Bebbington P, Brugha T, Farrell M, Gill B, et al. The National Psychiatric Morbidity Survey of Great Britain: initial findings from the household surveys. *Psychol Med*. 1997;27:775-89.
  31. Anderson IM. Selective serotonin reuptake inhibitors versus tricyclic antidepressants: a metaanalysis of efficacy and tolerability. *J Affect Disord*. 2000;58:19-36.
  32. Anderson GM, Beers MH, Kerluke K. Auditing prescription practice using explicit criteria and computerized drug benefit claims data. *J Eval Clin Pract*. 1997;3:283-94.
  33. Baxter K. *Stockley's drug interactions*. Chicago: Editora Pharmaceutical Press; 2009.
  34. Lacy CF, Armstrong LL, Goldman MP, Lance LL. *Medicamentos Lexi-Comp Manole*. São Paulo: Ed. brasileira. Manole; 2009.
  35. Thomson Reuters Healthcare. Find drug interactions [homepage na Internet]. New York, NY: Micromedex Healthcare Series; 2012 [access 10 Jun 2010]. Available at: <http://newmdx.csis.com.tw/home/dispatch>
  36. Campos ERC, Bardina NB, Veja MA, Lee BF. Interacciones medicamentosas: errores en la medicacion. *Rev Cuba Farm*. 1990;24:281-7.
  37. Fonseca AL. *Interações medicamentosas*. Rio de Janeiro: EPUC; 1994.
  38. Oga S, Basile AC. *Medicamentos e suas interações*. São Paulo: Atheneu; 1994.
  39. Nies AS, Spielberg SE. Principles of therapeutics. In: Gilman's G, editor. *The pharmacological basis of therapeutics*. 9th ed. New York: Mc Graw-Hill; 1996. p. 43-62.
  40. Noelle L. Bioethics and 21st century: view point of the jurist. *Presse Med*. 2002;31:565-70.
  41. Pepe VLE, Castro CGSO. A interação entre prescritores, dispensadores e paciente: informação compartilhada como possível benefício terapêutico. *Cad Saúde Pública*. 2000;16:815-22.
  42. Agencia Nacional de Vigilancia Sanitaria (Brasil). Parcerias para diminuir o mau uso de medicamentos. *Rev Saúde Pública*. 2006;40(1):191-4.
  43. Dolder C, Symanski B, Wootton T, Mckinsey J. Pharmacist interventions in an inpatient geriatric psychiatry unit. *Am J Health Syst Pharm*. 2008;65:1795-6.