Self-medication among patients with COPD: a cross-sectional analysis in the Brazilian Public Health System

Automedicação entre pacientes com DPOC: um estudo transversal no sistema público de saúde brasileiro

Charleston Ribeiro Pinto[1]
Pharmacist, MSc, Assistant Professor of Pharmaceutical Care. Postgraduate Program in Medicine and Health, Faculty of Medicine of Bahia, Federal University of Bahia, Salvador, Brazil. College of Pharmacy, Department of Sciences and Technologies, Southwestern Bahia State University, Jequié, Brazil. Department of Pneumology, Professor Edgard Santos University Hospital Complex, Federal University of Bahia, Salvador, Brazil.

Antônio Carlos Moreira Lemos
Physician, PhD, Adjunct Professor of Pneumology. Department of Pneumology, Professor Edgard Santos University Hospital Complex, Federal University of Bahia, Salvador, Brazil.

Lindemberg Assunção Costa
Pharmacist, Msc, Assistant Professor of Hospital Pharmacy. College of Pharmacy, Federal University of Bahia, Salvador, Brazil.

Aramis Tupiná de Alcântara
Pharmacist, Postgraduate in Clinical Pharmacy. Postgraduate Program in Medicine and Health, Faculty of Medicine of Bahia, Federal University of Bahia, Salvador, Brazil. Department of Pneumology, Professor Edgard Santos University Hospital Complex, Federal University of Bahia, Salvador, Brazil.

Laira Lorena Lima Yamamura
Pharmacist, Postgraduate in Pharmaceutical Care. Department of Pneumology, Professor Edgard Santos University Hospital Complex, Federal University of Bahia, Salvador, Brazil

Eduardo Martins Netto
Physician, PhD. Postgraduate Program in Medicine and Health, Faculty of Medicine of Bahia, Federal University of Bahia, Salvador, Brazil. Infectious Diseases Research Laboratory, Professor Edgard Santos University Hospital Complex, Federal University of Bahia, Salvador, Brazil.

charlestonribeiro@gmail.com

Abstract: The self-medication, when it occurs in an inadequate manner, may lead to a adverse reaction, interactions with prescribed medications, bacterial resistance and waste of health resources. This study seeks to identify the prevalence and the factors associated with self-medication in patients with COPD treated in the Brazilian public health care network. To answer this question, we prospectively made detailed questionnaires about drugs consumption with 383 patients whom came from the Health Care Networks and admitted into a Pharmaceutical Care Service of a Public Program Management COPD, in Salvador, Brazil. The prevalence of self-medication was 26.9%. The self-medication practice were associated with women with low education and a high number of comorbidities. This finding raises the discussion on the importance of a thorough evaluation of the usage pattern of drugs consumed by way of self-medication in patients with COPD, as a strategy to promote the rational use of medicines in the clinical practice.

Keywords: COPD; self-medication; pharmaceutical care; rational use of medicines.

Resumo: A automedicação pode resultar em reações adversas, interações com medicamentos prescritos, resistência bacteriana e desperdício de recursos. Procurou-se identificar a prevalência e os fatores associados à automedicação em pacientes com DPOC, tratados na rede de serviços do sistema público de saúde brasileiro. Para responder a essa pergunta, foram feitas, de forma prospectiva, entrevistas (questionários) sob consumo de medicamentos com 383 pacientes oriundos daquela rede de serviços e admitidos em um programa de atenção farmacêutica de um programa público de assistência à DPOC, em Salvador, Brasil. A prevalência de automedicação encontrada foi 26,9%. A prática da automedicação estava associada com mulheres com baixo nível educacional e elevado número de comorbidades. Esse achado suscita a discussão sobre a importância de uma avaliação criteriosa sobre padrões de uso de medicamentos sob a forma de automedicação em pacientes com DPOC, como estratégia para promover o uso racional de medicamentos na prática clínica.

Palavras-chave: DPOC; automedicação; atenção farmacêutica; uso racional de medicamentos.

Introduction

Chronic obstructive pulmonary disease (COPD) is a heterogeneous disease that affects mainly the elderly.[1,2] It often occurs amidst multiple comorbidities and is associated with polypharmacy.[3,4] Such characteristics, added to age-related pharmacokinetic and pharmacodynamics changes, predisposes the patients to a higher risk of adverse drug events and may interfere with their adherence to treatment.[2,5]

On the other hand, self-medication is considered an increasing problem in worldwide public health, where it is fairly common, especially in developing countries such as Brazil.[6,7] This practice happens frequently among the elderly population, and, when it occurs in an inadequate manner, may lead to an adverse reaction, interactions with prescribed medications, bacterial resistance and waste of health resources.[7]

Few studies have been conducted to evaluate the profile and the magnitude of self-medication practices among COPD patients. Studies of this nature may provide useful information to promote rational use of medicines in the clinical practice, and, consequently, to improve pharmacological management of disease. The objective of this study was to identify the prevalence and the factors associated with self-medication in patients with COPD treated in the Brazilian public health care network.

Methods

We prospectively made detailed questionnaires about drugs consumption with 383 patients, from September of 2010 to January of 2012, all of whom came from the Health Care Networks (HCN) from 41 municipalities of the state of Bahia and admitted into a Pharmaceutical Care Service of a Public Program Management COPD in Salvador, Northeastern Brazil.

HCN are polyarchic organizations of health services sets in the Brazilian Unified Health System that allow offering continuous and integral attention to a determined population, coordinated by the primary care. All the patients were diagnosed in our health care service as having moderate to very severe COPD, defined by the guidelines of the Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2010, and were 40 years or older.[8]

The patients answered a questionnaire on non-prescribed drugs used in the 7 days prior to the interview. The severity of baseline dyspnea was set by the modified Medical Research Council (mMRC) scale, validated in Brazil.[9] Self-medication was defined by the use of at least one drug with no prescription, no orientation and/or follow-up from the doctor or dentist.[10] Medicinal plants and herbal remedies were not analyzed.

The study was approved by the Research Ethics Committee of the Bahia State Department of Health. Written informed consent was obtained from all participants.

The chi-square test with 5% significance level was used to evaluate the association between the different variables and the use of non-prescribed drugs. The associations between the practice of self-medication and the exploratory variables (age, sex, self-reported skin color, schooling, household monthly income *per capita*, comorbidities, use of any drug to treat the disease, level of dyspnea, COPD severity according to the GOLD stage and category) were examined by prevalence ratio (PR) and the respective 95% CIs. Multiple Poisson regression with robust variance was used to obtain PR estimates for medication use, adjusted for all the exploratory variables.

Results

The frequency of self-medication practice was 26.9%. Table describes the factors associated with self-medication. The adjusted analysis showed positive association in women (PR=1.449; 95%CI: 1,031-2,037), people low education level (PR=1.659; 95%CI: 1.002;2.747) and with higher number of comorbidities (PR=2.011; 95%CI: 1.265;3.20).

The individuals with COPD made use of 137 non-prescribed drugs, corresponding to 239 active principles (mean = 0.6 active principles/individual; standard deviation = 1.3; amplitude = 0 to 8). The drugs most frequently used were analgesics (metamizole – 26.1% and acetaminophen – 5.6%), followed by muscle relaxants (combinations of orphenadrine – 23%, and combinations of carisoprodol and psycholeptics – 2.5%), anti-inflammatory and antirheumatic drugs (diclofenac – 8.7%) and drugs to treat gastrointestinal disorders (butylscopolamine – 3.7%).

Table 1. Factors associated with self-medication practice among COPD patients.

Variable		n (%)	Crude Analysis			Adjusted Analysis††		
			PR	95%CI	P-value	Ajusted PR	95%CI	P-value
Age, years		p† = 0,106						
	40 – 49	10 (35,7)	1			1		
	50 – 59	22 (26,5)	0,742	0,402 – 1,369	0,340	0,713	0,380 – 1,336	0,291
	60 – 69	22 (19,1)	0,536	0,287- 0,999	0,050	0,484	0,254 – 0,921	0,027
	≥ 70	49 (31,2)	0,874	0,505 – 1,512	0,630	0,830	0,476 – 1,148	0,799
Sex		p† = 0,014 *						
	Men	60 (23,1)	1			1		
	Woman	43 (35,0)	1,515	1,092 - 2,102	0,013	1,414	1,018 – 1,963	0,039
Skin color		p† = 0,814						
	Non-white	96 (93,2)	1					
	White	7 (6,8)	1,082	0,557 - 2,101	0,817			
Schooling, years completed		p† = 0,032 *						
	< 9	90 (29,3)	1,714	1,014 – 2,896	0,044	1,626	0,969 – 2,727	0,066
	≥ 9	13 (17,1)	1			1		
Household monthly income per capita, MW		p† = 0,010 *						
	≤ 1	91 (29,8)	1,939	1,121 – 3,355	0,018	1,677	0,951 – 2,958	0,074
	> 1	12 (15,4)	1			1		
Number of comorbidities		p† = 0,126						
	< 5	93 (26,0)	1			1		
	≥ 5	10 (40,0)	1,540	0,924 - 2,567	0,098	1,935	1,194 – 3,137	0,007
Use of any drug to treat COPD		p† = 0,429						
	No	27 (24,1)	1					
	Yes	76 (28,0)	1,163	0,796 –1,701	0,435			
mMRC dyspnea scale		p† = 0,255						
	< 2	17 (21,8)	1					
	≥ 2	86 (28,2)	1,294	0,819 - 2,043	0,269			
Repeated exacerbations		p† = 0,110						
	No	57 (27,1)	1			1		
	Yes	46 (31,5)	1,163	0,796 –1,701	0,435	1,218	0,874 – 1,696	0,244
Severity of airflow obstruction IV		p† = 0,691						
	Moderate	23 (24,7)	1					
	Severe	54 (28,9)	1,168	0,767 - 1,777	0,469			
	Very severe	26 (25,2)	1,021	0,628 - 1,659	0,934			
GOLD "ABCD" category		p† = 0,698						
	A	5 (22,7)	1					
	B	9 (25,7)	1,131	0,436 - 2,938	0,800			
	C	12 (21,4)	0,943	0,376 – 2,364	0,900			
	D	77 (28,5)	1,255	0,568 – 2,774	0,575			

MW = minimum wage; mMRC: modified Medical Research Council dyspnea scale; GOLD: Global Initiative for Chronic Obstructive Lung Disease; COPD: Chronic Obstructive Pulmonary Disease.

† Chi-square test.

†† Adjusted analysis for age, sex, schooling, household monthly income per capita, number of comorbidities and repeated exacerbations.

* Level of significance: $p < 0.05$.

Discussion and conclusion

The prevalence of self-medication found in our study (26.9%) was similar to that reported in a recent systematic review (22.9%) of population-based cross-sectional studies that evaluated the prevalence of self-medication in the adult population in Brazil.[6] The drugs most used are in agreement with what was observed in national studies.[7,11,12]

This study shows that self-medication among individuals with COPD is high in the Brazilian HCN setting, and is associated with women with low education and a high number of comorbidities. These findings are consistent with a recent cross-sectional population-based study using data from the PNAUM (National Survey on Access, Use and Promotion of Rational Use of Medicines).[12] The authors observed that self-medication was associated with women and individuals that have had one, or two or more chronic diseases. De Oliveira *et al*, in another national population-based study involving elderly individuals, reported positive association between *per capita* income and use of non-prescribed drugs.[7]

An interesting finding in our study, considering that most of the patients were elderly (50.3%), was the elevated (25.5%) pattern of consuming muscle relaxants, above all those in set dosage combinations containing orphenadrine and carisoprodol. These drugs are classified as potentially inappropriate for the elderly, regardless of the diagnosis or clinical condition, according to the Beers-Fick criteria, mainly because of the high risk of side effects.[13]

This finding raises the discussion on the importance of a thorough evaluation of the usage pattern of drugs consumed by way of self-medication in patients with COPD, as a strategy to promote the rational use of medicines in the clinical practice. The COPD disease management programs based-pharmaceutical care can provide opportunities to improve quality of self-medication and minimize the occurrence of drug-related problems, optimizing pharmacotherapy. New studies are necessary to help better characterize the potential risks associated with the practice of self-medication among COPD patients.

References

1. Barrecheguren, M. & Miravitlles, M. COPD heterogeneity: implications for management. *Multidiscip Respir Med*. 2016; 11 (14).
2. Hanania, N., Sharma, G. & Sharafkhaneh, A. COPD in the elderly patient. *Semin Respir Crit Care Med*. 2010; 31:596-606.
3. Franssen, F., Spruit, M. & Wouters, E. Determinants of polypharmacy and compliance with GOLD guidelines in patients with chronic obstructive pulmonary disease. *Int J Chron Obstruct Pulmon Dis*. 2011; 6:493-501.
4. Divo, M., Casanova, C., Marin, J., Pinto-Plata, V., de-Torres, J., Zulueta, J. *et al*. COPD comorbidities network. *Eur Respir J*. 2015; 46:640-650.
5. Valente, S., Pasciuto, G., Bernabei, R. & Corbo, G. Do we need different treatments for very elderly COPD patients? *Respiration.* 2010; 80:357-368.
6. Domingues, P., Galvao, T., Andrade, K., Sa, P., Silva, M. & Pereira, M. Prevalence of self-medication in the adult population of Brazil: a systematic review. *Rev Saúde Pública*. 2015; 49(36).
7. de Oliveira, M., Francisco, P., Costa, K. & Barros, M. Self-medication in the elderly population of Campinas, Sao Paulo State, Brazil: prevalence and associated factors. *Cad de Saúde Pública*. 2012; 28:335-345.
8. Global Initiative for Chronic Lung Disease (GOLD). Global Strategy for Diagnosis, Management and Prevention of Chronic Obstructive Pulmonary Disease (2016). Fontana-on-Geneva Lake: GOLD, 2016. [*on line*] [Available from: Global Strategy for Diagnosis, Management and Prevention of Chroni…]
9. Kovelis, D., Segretti, N., Probst, V., Lareau, S., Brunetto, A. & Pitta F. Validation of the Modified Pulmonary Functional Status and Dyspnea Questionnaire and the Medical Research Council scale for use in Brazilian patients with chronic obstructive pulmonary disease. *J Bras Pneumol*. 2008; 34:1008-1018.
10. Ministry of Health (Brazil). Portaria n° 3916, de 30 de outubro de 1998. [*on line*] Acces-

sed on 1 Aug 2016. Available at http://bvs-ms.saude.gov.br/bvs/saudelegis/gm/1998/prt3916_30_10_1998.html
11. Santos, T., Lima, D., Nakatani, A., Pereira, L., Leal, G. & Amaral, R. Medicine use by the elderly in Goiania, Midwestern Brazil. *Rev Saúde Pública*. 2013; 47:94-103.
12. Arrais P., Fernandes M., Pizzol T., Ramos R., Mengue S., Luiza V., Tavares N., Farias M., Oliveira M. & Bertoldi A. Prevalence of self-medication in Brazil and associated factors. Rev *Rev Saúde Pública*. 2016; 50 (suppl 2):13s.
13. Fick, D., Cooper, J., Wade, W., Waller, J., Maclean, J. & Beers, M. Updating the Beers criteria for potentially inappropriate medication use in older adults: results of a US consensus panel of experts. *Arch Intern Med*. 2003; 163:2716-2724.

Author contributions

C.P. and A.L. were involved in the design and implementation of the study. A.A. and L.Y. were involved in data collect. E.N was involved in was involved in data analysis and interpretation. The manuscript was reviewed by L.C.

Competing interests

The authors declare no conflict of interests.

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