DOI: https//doi.org/10.13037/ ras.vol19n68.7332

Original Article

Recebido em: 04/09/2020 | Aceito em: 14/04/2021

Evaluation of medical prescriptions of antibacterials dispensed with revenue retention in a pharmacy from interior of Rio Grande do Sul

Avaliação das prescrições médicas de antibacterianos dispensadas com retenção de receita em uma farmácia no interior do Rio Grande do Sul

Joceleia Paz Damian[1]
Orcid: http://orcid.org/0000-0001-5193-0978

Thiago de Souza Claudino[2]
Orcid: http://orcid.org/0000-0003-1845-4935

Viviane Cecilia Kessler Nunes Deuschle[3]
Orcid: http://orcid.org/0000-0001-6797-0376

Abstract

Objective: the objective of this study was to analyze medical prescriptions of antimicrobials dispensed in a farmacy within the State of Rio Grande do Sul, in order to identify the most antibiotics dispensed. **Material and Methods:** This is a documentary, cross-sectional and field research, with a quantitative approach, carried in April 2019, in a pharmaceutical establishment. **Results:** Was analyzed 410 medical prescrições, em amostra obtained by convenience. Profile that stands is of woman comities between 20 to 32 years. The antimicrobial more prescribed no study period was to Amoxicillin (28.5%) pertaining to Penicillin classes, followed by Azithromycin (13%) pertaining to Macrolides class. **Conclusion:** It can be concluded that the most commonly used antibiotic for doctors because for being an effective antimicrobial in various clinical situations and is widely used for respiratory problems that are common during autumn and winter periods, in which was carried out by research.
Keywords: anti-infective agents; pharmaceutical services; drug effects. respiratory tract diseases.

Resumo

Objetivo: analisar prescrições médicas de antimicrobianos dispensados em uma farmácia do interior do Estado do Rio Grande do Sul, para identificar quais os antibióticos mais dispensados. **Material e Métodos:** Trata-se de uma pesquisa do tipo documental, transversal e de campo, com abordagem quantitativa, desenvolvida no mês de Abril de 2019, em um estabelecimento farmacêutico. **Resultados:** Foram analisadas 410 prescrições médicas, em amostra obtida por conveniência. O perfil que se destaca é de mulheres com idades entre 20 à 32 anos. O antimicrobiano mais prescrito no período de estudo foi a Amoxicilina (28,5%) pertencente a classe das Penicilinas, seguido de Azitromicina (13%) pertencente à classe dos Macrolídeos. **Conclusão:** Conclui-se que o antibiótico mais utilizado é selecionado pelos médicos por ser um antimicrobiano eficaz em diversas situações clínicas e amplamente utilizado para problemas respiratórios que são mais comuns no período de outono e inverno, no qual foi desenvolvida a pesquisa..
Palavras-chave: anti-infecciosos; assitência farmacêutica; efeitos dos fármacos; doenças respiratórias.

[1] Universidade de Cruz Alta – Unicruz. Curso de Farmácia. Rio Grande do Sul, Brasil. E-mail: joceleiadamian@hotmail.com
[2] Centro Universitário Metodista – IPA. Rio Grande do Sul, Brasil. E-mail: thiago_claudino@yahoo.com.br
[3] Universidade de Cruz Alta, Grupo de Pesquisa em Atenção Integral à Saúde. Rio Grande do Sul, Brasil. E-mail: vdeuschle@unicruz.edu.br

Introduction

Antimicrobial agents are drugs used to treat infections, with the ability to destroy an invading microorganism without affecting the host cells, consisting of one of the most prescribed classes of drugs, both in outpatient and inpatient settings[1]. The selection of the most appropriate antibiotic requires knowledge of the microorganism in question, the determination of its sensitivity and type of activity (prophylactic or curative) and must be careful and restricted, since it interferes with the microbiota of the individual and the environment[2,3].

However, the inappropriate use of antimicrobials, such as indiscriminate and excessive clinical use, are the main factors that lead to microbial resistance, the emergence of adverse reactions and increased costs with these drugs[3]. Among the main factors leading to the problem of resistance are inadequate choice of drug, including dosage and route of administration, insufficient time of use and incorrect intervals, and lack of defined diagnosis[4]. In addition, lack of adherence to drug therapy and the use of leftover drugs from other treatments have contributed to the development of resistance[5].

From a pharmacological point of view, microbial resistance to antibiotics occurs, by mechanisms that include induction of mutation in the native DNA or introduction of a foreign DNA (resistance genes) that can be transferred between different genera or species of bacteria. There are four mechanisms determining the high rate of antimicrobial resistance: enzyme modification or destruction, reduction of cell permeability, changes in antimicrobial target molecules, and production of alternative target molecules[5,6].

The dispensation, like the prescription, involves technical, legal, and clinical issues, resulting in a legal document for which both the prescriber and the dispenser are responsible, both being subject to sanitary surveillance actions and control legislation[7,8].

In order to control the dispensation and marketing of antimicrobials and promote their rational use, the Agência Nacional de Vigilância Sanitária (ANVISA) published the RDC 44/2010, which was soon revoked by RDC 20/2011. This resolution was established in order to provide patients with quality medicines, in adequate doses and for a defined time. This legislation provides that antimicrobials are dispensed through special control prescription when presented legibly by qualified professionals and containing information such as: name of the drug or substance, dosage or concentration, pharmaceutical form, quantity (in full), posology, among others[9].

Thus, the dispensation of antimicrobials in pharmacies has become a private activity of the pharmacist, who is responsible not only for the delivery of the drug, but also for the guidance on the correct and rational use to ensure adequate efficacy, in addition to avoiding possible adverse reactions and drug interactions. The pharmaceutical professional has fundamental importance in demonstrating to the patient the importance of the correct treatment, not interrupting it, obeying the intervals, and ensuring adherence to drug therapy[10, 11].

Given this context, and taking into account that the prescription of antibiotics increases in early fall due to the increase in respiratory diseases that require such medications, the aim of this study is to analyze medical prescriptions of antimicrobials dispensed with prescription retention, to identify which antibiotics were most dispensed in the month of April, and their respective classes, in a city in the interior of Rio Grande do Sul.

Materials and Methods

Sample and type of study

This is an observational, cross-sectional research with quantitative approach, developed in April 2019, in a commercial pharmaceutical establishment in Tupanciretã, with sample obtained by convenience.

This work obtained approval from the Research Ethics Committee through the consubstantiated opinion number 2,771,556.

Research design

The information was collected from the pharmacy database, with the support of computerized data by the management program to obtain the profile of users and the medical prescriptions retained in the pharmacy. The research instrument was a self-made data collection form with the following questions: gender, age, and antibiotic purchased. The results obtained were expressed in percentages.

Inclusion and Exclusion Criteria

Prescriptions containing antimicrobials were included and those containing other drugs or outside the study period were excluded.

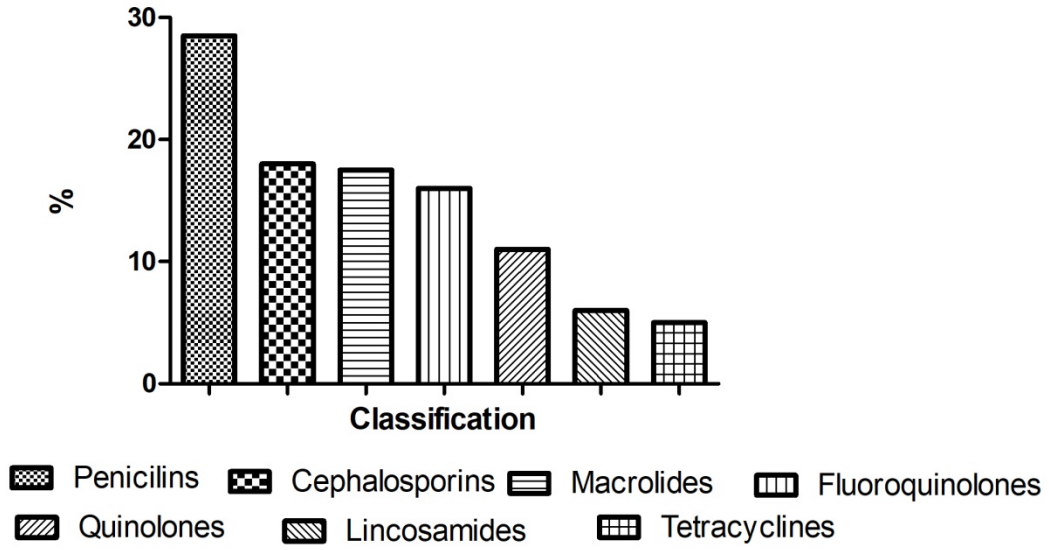
Procedures

The results were tabulated according to the name of the drugs and then grouped by therapeutic class. The data was analyzed using the software Microsoft Office 2013- Excel. Relative and absolute frequency was used for the analysis and used descriptive statistics.

Results

Data from 410 prescriptions containing antimicrobials were analyzed. The profile of patients and their distribution by gender is shown in Table 1. In a first approach, it was possible to identify the most prescribed drugs (Table 1), and the classes to which they belong (Figure 1).

Figure 1. Classes of the most prescribed antibiotics in the month of April/2019



Source: Authors, 2019.

Among the identified drugs, 366 were prescribed in the pharmaceutical form of tablets and 44 in the form of injectables.

All prescriptions were duly filled, following the requirements of the RDC No. 20/2011, such as: legible writing; no erasures; patient identification; name of the drug or substance prescribed in the form of Brazilian Common Denomination (BCD), dose or concentration, pharmaceutical form, posology and quantity; identification of the issuer, name of the professional with his registration in the Regional Council and date of issue.

Table 1. Distribution of prescriptions by gender.

.Gender	Number of prescriptions	Age
Female	240	20 a 32 years old
Male	170	18 a 35 years old

Source: authors.

Discussion

Respiratory diseases are among the most frequent causes of seeking medical care, which eventually leads to the use of antibiotics[12]. However, it is not always possible to wait for the identification of the etiologic agent and its antibiogram, due to the patient's clinical condition that can be severe, putting his life at risk by waiting. Based on this premise, the choice of the best antibiotic to be used is related to the presumption of the infectious site, the predominant microbial flora at the site of origin, the probable etiologic agents, the resistance of microorganisms to antibiotics, and their sensitivity profile[13].

In our study, when analyzing the prescriptions, all prescriptions were properly filled, following the requirements of the RDC No. 20/2011, such as: legible writing; no erasures; patient identification; name of the drug or substance prescribed under the Brazilian Common Denomination (BCD), dose or concentration, pharmaceutical form, dosage and quantity; identification of the issuer, name of the professional with his registration in the respective Regional Council and date of issue[9]. In a research conducted with medical prescriptions in a community pharmacy in the city of Caucaia - CE, in which 100 prescriptions were analyzed, it was found that most of them contained illegible items or lacked data regarding posology and lacked the prescriber's complete data[14].

The results of this study show that the age range of patients in the pharmacy database ranged from 20 to 32 years. These data corroborate those obtained in a similar research in a community pharmacy in Caucai - CE, in which the predominant age range was 20 to 39 years[14].

It was found that females were more prevalent than males, similar to data obtained in a survey conducted in a public pharmacy in Carmo do Cajuru - MG, in which it was verified that females were the ones who most used the medicines[15]. The literature reports that, in general, men suffer more from chronic and severe health conditions than women and it is observed that the presence of men in primary health care services is lower than that of women, justifying the greater demand of women for medical care and treatment[16].

Regarding the pharmaceutical form, tablets were the most prescribed, that is, of the 410 prescriptions analyzed, 366 were in this presentation, which corresponds to 89%. Gonçalves et al.[14], in their study, also found a frequency of 68% of tablets among the most prescribed antimicrobials. The prescriber should always choose the most convenient and appropriate pharmaceutical form for the patient's characteristics, and solid forms, especially tablets, have the advantage of being more comfortable to administer.

Only 11% of the prescribed drugs were injectable. According to Nacimento and Magalhães[17], the use of parenteral medication should be prescribed with caution, since it is one of the causes of non-adherence to therapy and a greater risk of adverse reactions.

The antibiotic Amoxicillin, from the Penicillin group, was the most prescribed drug. Its advent signaled several possibilities for the treatment of infectious diseases worldwide, becoming a therapeutic option in the prevention and treatment of different infectious processes and their complications[18]. In a survey conducted in the city of Erechim-RS, it was shown that Amoxicillin was also the most prescribed antimicrobial in the study period[19].

Regarding the cases that require treatment with antibiotics, the same must be chosen according to the coverage over the bacteria most commonly involved in the infection. With this, Amoxicillin shows to have this profile and is recommended for the less complicated cases, associated or not with beta-lactamase inhibitors, such as Potassium Clavulanate. However, this association is not a first option and should be used only in cases of aggravating comorbidities or in suspected or confirmed cases of bacterial resistance[20]. In our study, this is evidenced by the prescriptions of this association that correspond to 10.5% while the individual Amoxicillin corresponds to 18%. But in many places, Amoxicillin is not being recommended as first-line therapy, only in some regions where it is used according to the pattern of resistance evidenced. Also, data show a higher microbial susceptibility (84.2%) when associated with Potassium Clavulanate.

Table 2. Most commonly used antimicrobials during the survey and their respective classes.

Antibiotic Class	Antimicrobials	Number of prescriptions	%
Penicillins	Amoxicillin (500 and 875 mg)	72	18
	Amoxicillin+Clavulanate 875mg	42	10,5
Macrolides	Azithromycin 500mg	70	17,5
Fluorquinolones	Levofloxacin (500 e 750 mg)	65	16
Cephalosporins	Cephalexin 500mg	27	7
	Ceftriaxone 1 g injectionl	27	7
	Ceftriaxone 500 mg injectable	17	4
Quinolones	Ciprofloxacin 500mg	25	6
	Norfloxacin 400mg	20	5
Lincosamides	Clindamycin 300mg	25	6
Tetracyclines	Tetracycline 500mg	20	5

Source: Authors, 2019.

It is also known that antibiotics should be prescribed with criteria, since unnecessary or prolonged use is one of the main factors related to microorganism resistance. The strategies that are used for the rational use of antibiotics are based on the prevention and control of infections, in order to verify the susceptibility of microorganisms. However, studies have shown that prescription and clinical results are not always in accordance with the antibiogram, and this test is not always requested, as observed in the study by Tavares and Sá (2014)[21]. This study evaluated 104 episodes of urinary tract infection (UTI), in which 46 urine cultures (which presented positive results) were requested, but only 43 antibiograms, i.e., it is not a strategy used in clinical practice. Furthermore, in six antibiograms, the microorganism was resistant to the prescribed antibiotic.

According to the results of this research, Azithromycin, belonging to the Macrolide class, appears in second place as the most dispensed antimicrobial. This drug is used for the treatment of soft tissue and respiratory infections caused by Gram-positive bacteria. Azithromycin has many advantages, such as its broad spectrum of action, rapid tissue diffusion, and high biological half-life. This research obtained results similar to a study conducted in the city of Bacabal-MA, in which 124 prescriptions were analyzed and the most prescribed antimicrobial was Azithromycin, representing 22% of the total[22].

Analyzing the classes of antibiotics, which includes the sum of the representative drugs of each class, it is observed that Penicillins are the most prescribed class, followed by Cephalosporins, Macrolides and Fluorquinolones. Gonçalves et al.[14], found that the most prescribed classes were Quinolones, Penicillins and Macrolides. However, the authors conducted their research in the month of February 2016, which may be related to the difference between the most dispensed classes.

At the national level, all policy makers, with the support of the Ministries of Health, should implement national plans for the prevention and management of antibiotic resistance, promoting preventive actions in order to minimize their use by encouraging new research for the development of new drugs[17]. Some data suggest that the use of antibiotics has been reduced in many countries in the last decade, due to the greater control established by health regulatory agencies[23].

Still, in the scope of pharmaceutical care it is of utmost importance that pharmacists not only dispense prescriptions, but also guide patients as to the importance of its adequate use. Nicolini et al.[4] emphasizes in their study that antibiotic therapy can be compromised due to the patient's lack of understanding. Many prescribers do not inform about the diagnosis, drugs and dosage prescribed, possible adverse reactions, and mainly, many prescriptions are still illegible. In this sense, the pharmacist is the qualified professional who can contribute to a greater adherence to drug therapy and avoid adverse reactions and microbial resistance resulting from the inappropriate use of drugs. They can also advise on not interrupting treatment after symptom relief and on not using antibiotic leftovers from previous treatments.

In addition, it can provide guidance on the use of over-the-counter drugs and the risks of self-medication and possible drug interactions, collaborating substantially to the rational use of antimicrobials through pharmaceutical care. Their social function goes beyond technical knowledge, which is essential for the well-being and quality of life of the population.

Conclusion

In view of the above, it can be observed that Amoxicillin was the most used antibiotic in the study period, selected for being effective in several clinical situations or for considering the characteristics of the pathogens prevalent at a certain time of the year. It is observed that with the regulation of the prescription of antimicrobials, there was a greater control of their acquisition. However, some patients may use the leftovers from other treatments incorrectly. In this sense, the role of the pharmaceutical professional, through pharmaceutical care in all areas of health care, is increasingly necessary to promote the rational use of antimicrobials effectively and ensure their proper use.

References

1. Paz EF, Stefanon EBC. Avaliação da dispensação de antimicrobianos em uma farmácia hospitalar da Região Central do RS. Infarma. 2010;22(1/4):55-57.
2. Oliveira WL, Branco AB, Avaliação da antibioticoterapia em pacientes internados no Hospital Regional do Guará – DF. Comunicação em Ciências da Saúde. 2007;18(2): 107-114.
3. Fernandes IQ, Sousa HF, Brito MAM, Tavares SN, Matos VC, Souza MOB. Impacto farmacoeconômico da racionalização do uso de antimicrobianos em Unidades de Terapia Intensiva. Revista Brasileira de Farmácia Hospitalar e Serviços de Saúde. 2012;3(4):10-14.
4. Nicolini P, Nascimento JWL, Greco KV, Menezes FG. Fatores relacionados à prescrição médica de antibióticos em farmácia pública da região Oeste da cidade de São Paulo**.** Revista Ciência & Saúde Coletiva. 2008;13(supl.):689-696.
5. Loureiro RJ, Roque F, Rodrigues AT, Herdeiro MT, Ramalheira E. O uso de antibióticos e as resistências bacterianas: breves notas sobre a sua evolução. Revista Portuguesa de Saúde Pública. 2016;34(1):77-84.
6. Roque F, Soares S, Breitenfeld L, Lopez Duran A, Figueiras A, Herdeiro MT. Attitudes of community pharmacists to antibiotic dispensing andmicrobial resistance: A qualitativ estudy in Portugal. Int J Clin Pharm.2013;35:417–24.
7. Junior AG. Análise das prescrições de antimicrobianos dispensados em uma drogaria da cidade de Colider-MT. FACIDER Revista Científica. 2015;(8):1-15.
8. Leite SN, Bernardo, NLMC, Álvares J, Junior AAG, Costa EA, Acurcio FA, et al. Serviço de dispensação de medicamentos na atenção básica no SUS. Revista de Saúde Pública. 2017;51(supl. 2:11S):1S-10S.
9. BRASIL. Ministério da Saúde. Agência Nacional de Vigilância Sanitária (ANVISA). RDC 20 de 9 de Maio de 2011. Dispõe sobre o controle de medicamentos à base de substâncias classificadas como antimicrobianos, de uso sob prescrição, isoladas ou em associação. Brasília – DF, 2011.
10. Guedes RF, Guedes RF, Guedes HHS. O papel educativo do farmacêutico frente ao desafio da implantação da RDC 20/2011: da automedicação ao consumo consciente de antimicrobianos. Revista Eletrônica Gestão e Saúde. 2014;5(2):436-458.
11. Ladeira R, Moraes W, Oliveira C. Perfil de dispensação de antimicrobianos antes e depois da promulgação da RDC 44/2010. Revista Acta Brasiliensia. 2017;8(2):47-56.
12. Paganotti AM, Reis RA, Crozatti MTL, Silva ATA, Fegadolli C. Prescrição de antibióticos a crianças atendidas no inverno em Unidade de Saúde de município paulista. Revista Brasileira de Ciências Farmacêuticas Básica e Aplicada. 2013;34(3):441-447.
13. Bisson MP. Farmácia Clínica e atenção farmacêutica**.** 2ed. São Paulo: Manole, 2007.
14. Gonçalves M, Ribeiro J, Silva J, Francelino M. Avaliação das receitas de antimicrobianos dispensados em uma farmácia comunitária no município de Caucaia – Ceará. Boletim Informativo Geum. 2017;8(1):15-22.
15. Costa M. Análise das prescrições de antimicrobianos: farmácia pública da prefeitura de Carmo do Cajuru. Revista Saúde e Desenvolvimento. 2016;9(5):73-84.
16. Gomes R, Nascimento EF, Araujo FC. Porque homens buscam menos os serviços de saúde do que as mulheres? As explicações de homens com baixa escolaridade e homens com ensino superior. Saúde Pública. 2017;23(3):565-574.
17. Nascimento OS, Magalhães IRS. Análise da prescrição de antimicrobianos dispensados em uma rede de drogarias da região Norte do Brasil. Revista Brasileira de Farmácia. 2013;94(3):211-218.

18. Franco J, Mendes R, Cabral F. O papel do farmacêutico frente à resistência bacteriana ocasionada pelo uso irracional de antimicrobianos. Revista Científica. 2016:1(72):1-17.
19. Valentini MH, Silva AC, Roginski AC, Chicota LC, Grazziotin NA, Diefenthaeler HS. Análise da qualidade de prescrições de antimicrobianos comercializados em uma drogaria da Região Norte do Rio Grande do Sul.HU Revista. 2017;43(1):19-24.
20. Piltcher OB, Kosugi EM, Sakano E, Mion O, Testa JRG, Romano FR, et al. How to avoid the inappropriate use of antibiotics inupper respiratory tract infections?A position statement from na expert panel. Brazilian Jorunal of Otorhinolaryngology. 2018;84(3):265-279.
21. Tavares IVB, Sá AB. Perfil de prescrição de antimicrobianos para infecções do trato urinário nos cuidados de saúde primários. Revista Portuguesa de Medicina Geral e Familiar. 2014;30(2):85-100.
22. Firmo W, Paredes A, Cunha C, Torres AG, Buccini DF. Análise das prescrições médicas de psicotrópicos de uma farmácia comercial no município de Bacabal, Maranhão. Journal of Management & Primary Health Care. 2013;4(1):10-18.
23. Brito MA, Cordeiro BC. Necessidade de novos antibióticos. Jornal Brasileiro de Patologia e Medicina Laboratorial. 2012;48(4):247-249.

How to cite this article:

Damian JP, Claudino TS, Deuschle VCKN. Evaluation of medical prescriptions of antibacterials dispensed with revenue retention in a pharmacy from interior of Rio Grande do Sul. Rev. Aten. Saúde. 2021; 19(68): 201-208.