International Journal of Progressive Sciences and Technologies (IJPSAT)
ISSN: 2509-0119.

https://ijpsat.org/
Vol. 47 No. 1 October 2024, pp. 304-312

Prevalence Of Antibiotic Use In Children Aged 0-7 In Primary Care

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Abstract

Introduction – This paper presents a general overview of the importance of antibiotic use, the issue of antibiotic resistance, the side effects of antibiotics, their benefits, and the different types of antibiotic use. Antibiotics are powerful medications that save the lives of many patients treated for bacterial infections. They are effective when used according to the conditions prescribed by the physician, but along with their benefits, they also have side effects.
The purpose of this study is to understand the prevalence of antibiotic use in children aged 0-7 in primary care. The aim of the research was to identify the health issues these patients were diagnosed with and the types of antibiotics they were treated with.
Methodology – This is a descriptive study aimed at illustrating the different types of antibiotics used by patients treated at the Family Health Center in Arbana, Prizren. Data collection included sources such as medical records, visit protocols, and archives, which documented the cases and treatments provided to patients during the period from January to September 2024.
Results – The study results provided significant information regarding the prevalence of antibiotic use in children aged 0-7. Comparing theory with practical results helped us understand the importance of antibiotic use, the health problems faced by patients in this age group, and the most commonly used antibiotics.
Conclusions – Based on the study findings, we concluded that there is a high level of antibiotic use, and there is still a belief that antibiotics are necessary to combat health problems. The most common health issues treated at the Family Health Center in Arbana included acute bronchitis, acute tonsillitis, acute pharyngitis, nausea, and diarrhea. The most commonly used antibiotics for these patients were ceftriaxone, opsen, cefaclor, and ceftinex.
Keyvords – Prevalence, Atibiotics, Children.

I. INTRODUCTION

Antibiotics are powerful medications that treat specific infections and offer the potential to save lives globally when used appropriately. They either stop bacterial reproduction or destroy bacteria before they multiply and cause symptoms, allowing the immune system to eliminate them. White blood cells attack harmful bacteria, and even when symptoms appear, the immune system can usually manage and prevent the infection. However, antibiotics are often misused, particularly in treating respiratory infections in children, where their use is unnecessary and leads to antimicrobial resistance (Mijović et al., 2022). Sometimes, the number of harmful bacteria becomes too overwhelming for the immune system to combat, and antibiotics are highly beneficial in such cases (Healthline Media, 2023).

One of the most dangerous phases occurs when viruses, parasites, and bacteria mutate, rendering antibiotics ineffective in treating the health problem. This phenomenon is known as antimicrobial resistance. Antimicrobial resistance is a global healthcare challenge that governments and healthcare systems are addressing primarily through antimicrobial stewardship. This approach aims to

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improve the use of antibiotics, avoid inappropriate therapies, and reduce the number of therapies by aligning them with national/international objectives (McCloskey, Malabar, McCabe, Gitsham, & Jarman, 2023).

Reducing antibiotic prescriptions in primary care is essential to slow the development and spread of antibiotic-resistant bacteria. The benefits of this reduction include saving physicians' time in the long term and preventing unnecessary side effects for patients, such as diarrhea and nausea. Both prescribers and patients often feel uneasy when antibiotics are not prescribed. Some patients expect to receive antibiotics, as they believe these drugs will fight their illness, meaning doctors and other healthcare providers need to spend time explaining the decision not to prescribe antibiotics. In certain cases, antibiotics are necessary. As Paul Little mentioned, "for some groups of people, such as those with chronic obstructive pulmonary disease and recurrent infections, reducing antibiotic prescriptions may not be safe" (NIHR Evidence, 2024).

Research conducted by NIHR Evidence shows that antibiotic prescriptions can be safely reduced. It also highlights that for certain high-risk groups, antibiotics may still be recommended. Physicians require clear information to support clinical decision-making during consultations, tools to assess risk, and guidance on the benefits of prescribing antibiotics for individual patients. Ongoing research from some of the studies presented in this webinar is expected to provide validated tools to help physicians prescribe fewer antibiotics in their treatments (NIHR Evidence, 2024).

II. Literature Review

2.1. Understanding Antibiotics

Antibiotics are one of the most commonly used agents in modern healthcare to treat bacterial infections. However, this was not always the case. In earlier times, people sought various ways to treat infections, using substances such as dyes, molds, and even heavy metals, which were thought to offer healing potential. Different microorganisms hold medical significance, including bacteria, viruses, fungi, and parasites. Antibiotics are compounds that specifically target bacteria and are designed to treat and prevent bacterial infections (Gould, 2016).

Antibiotics are medications used to treat bacterial infections. They may not be effective against some viral infections and most other infections. Antibiotics either kill bacteria or stop them from reproducing, allowing the body's natural defenses to eliminate them. Physicians aim to use antibiotics for specific bacterial infections, but they sometimes use broad-spectrum antibiotics that treat multiple types of bacteria while waiting for test results that identify the specific bacteria (Merck & Co., 2024).

Bacteria are microscopic microbes that live inside and on the human body. Most types of bacteria are harmless and do not cause illness. Some bacteria even help maintain health. However, some bacteria can make us sick, with effects ranging from mild infections to severe infections that may require hospitalization (Cleveland Clinic, 2024).

Taking antibiotics as prescribed by doctors and healthcare providers is crucial. These antibiotics must be taken in the prescribed dose, frequency, and number of days. Bacteria can develop resistance to the effects of antibiotics, especially if they are not taken according to instructions. Antibiotics can have side effects, such as stomach discomfort, diarrhea, and, in women, vaginal infections. Some people are allergic to certain antibiotics. Antibiotics are classified into groups based on their chemical structure. However, antibiotics within each group often affect organisms differently and can be effective against different bacteria (Merck & Co., 2024).

2.2. Use of Antibiotics

Antibiotics are used as prophylaxis against bacterial infections. Since the 1940s, over 140 antibiotics have been developed for human use. These advancements in patient outcomes have enabled high-risk medical procedures to become routine. However, in the past 30 years, only two new classes of antibiotics have been developed, potentially signaling the end of the "golden era" of antibiotic discovery (McCloskey, Malabar, McCabe, Gitsham, & Jarman, 2023).

The greatest medical achievement of the 20th century was the introduction of antibiotics into clinical practice because their appropriate use reduces morbidity and mortality (Thomson, Berry, Robinson, Brown, Bambra, & Todd, 2020). In addition to treating many infectious diseases, antibiotics have enabled many modern medical procedures, including organ transplants, cancer treatment, and infection prevention in surgeries (Mazińska, Strużycka, & Hryniewicz, 2017). However, antibiotics are often

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misused, especially for treating upper respiratory tract infections in children, where antibiotic use is unnecessary and inappropriate. There is sufficient evidence to show the primarily viral origin of these conditions and that this practice does not affect the severity of symptoms or the duration of illness (Oikonomou, Gkentzi, Karatza, Fouzas, Vervenioti, & Dimitriou, 2021).

It is crucial to use antibiotics responsibly. They can help us feel better and are often lifesaving. However, when it comes to antibiotics, it is possible to have too much of a good thing. Using antibiotics when they are not needed, such as for viral infections or mild bacterial infections that can resolve on their own, can lead to unnecessary side effects and contribute to the global problem of antibiotic resistance (Cleveland Clinic, 2024).

III. AIM AND METHODOLOGY OF THE RESEARCH

The aim of this research was to understand the prevalence of antibiotic use in children aged 0-7 years within primary care. The study presents the treatment of 229 patients aged 0-7 years who were administered antibiotics during the period from January to September 2024. For the month of January, 23 patients were included, in February 15 patients, in March 19 patients, in April 21 patients, in May 25 patients, in June 23 patients, in July 34 patients, in August 27 patients, and in September 42 patients. The research provides data on the ages of the children affected by different health issues, their gender, the health problems they faced throughout the months, and the types of antibiotics prescribed to these patients.

The research was conducted at the Family Medicine Center in Arbana, Prizren. The data were collected from medical documentation, based on the protocols of medical visits and the archives of the health center, covering the period from January to September 2024. This is a descriptive study that aims to highlight the current situation regarding the prevalence of antibiotic use during the January-June period of 2024.

IV. RESEARCH FINDINGS

EMPIRICAL PRESENTATION OF THE RESEARCH

The research findings are presented in tabular form and graphs.

RESULTS OF THE RESEARCH FOR JANUARY

In January, 23 patients participated in the study, categorized by age as shown in the figure below.

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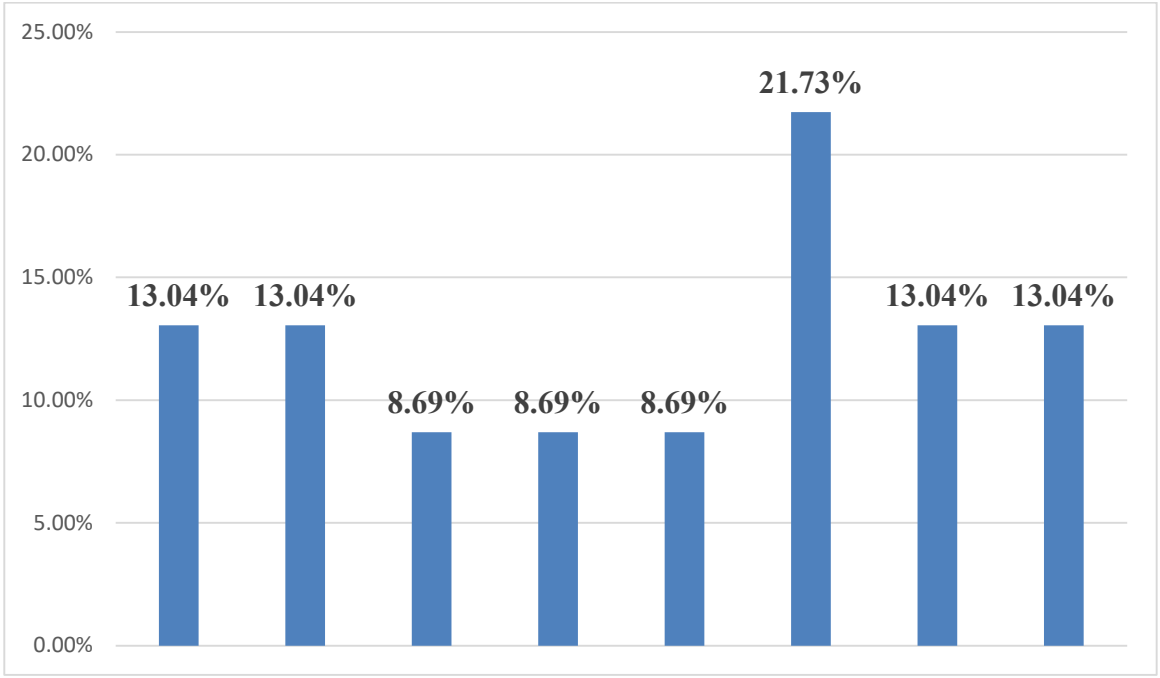

Figure 1. Structure of research participation by age for the month of January

From the results presented in Figure 1, we understand that the majority of patients belong to the age group of 5 years, accounting for 21.73% of them. Meanwhile, 13.04% are under 1 year old, 1 year old, 6 years old, and 7 years old, while another portion, consisting of ages 2 years, 3 years, and 4 years, constitutes 8.69%.

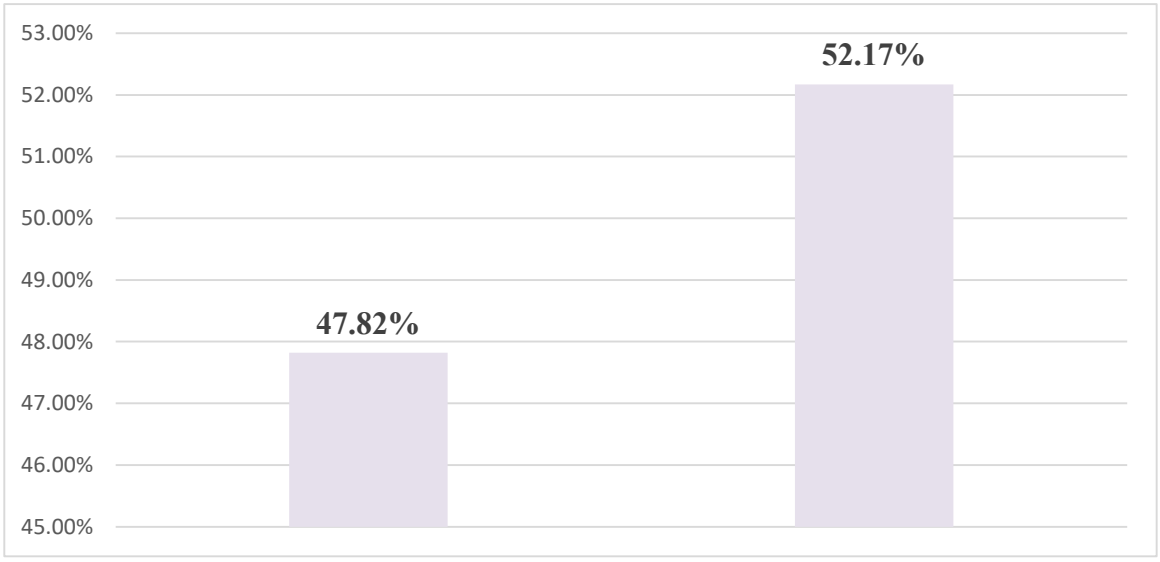

Figure 2. Structure of research participation by gender for the month of January

According to the results shown in Figure 2, we understand that participation in the research was almost equal between the two genders. The results indicate that 52.17% of the patients were male, while 47.82% were female.

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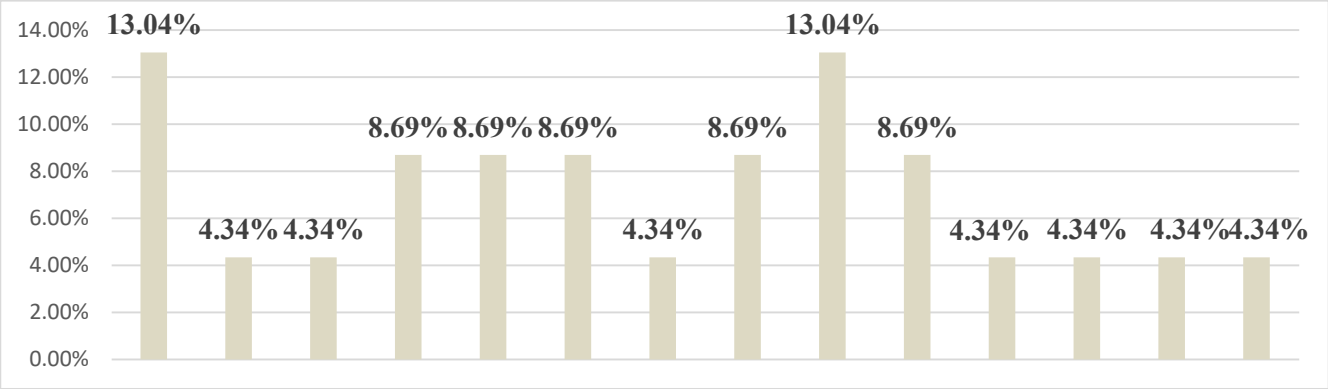

Figure 3. Structure of research participation by diagnosis for the month of January

According to the research results based on the participants, we have the following findings: the largest portion of them were diagnosed with diarrhea and inflammation, accounting for 13.4%. Additionally, 4.34% were diagnosed with acute sinusitis, constipation, acute pharyngitis, bronchial asthma, acute cystitis, laryngitis, acute tracheitis, and nasopharyngitis. According to the data, the remaining 8.69% of the patients were diagnosed with nausea, urinary infections, acute bronchiolitis, acute tonsillitis, and gastroenteritis.

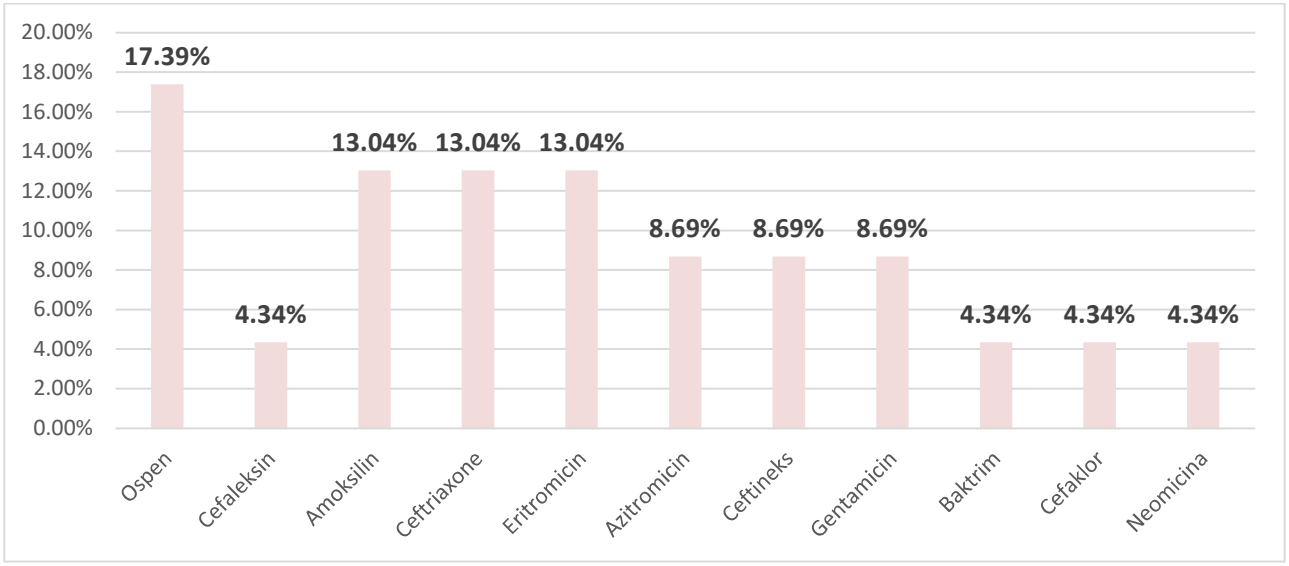

Figure 4. Structure of research participation by antibiotic use for the month of January

In Figure (4), the results regarding the use of antibiotics are presented. From the results, we understand that the most commonly used antibiotic was Ospen, with 17.39% of participants using it. Additionally, 13.04% used Amoxicillin, Ceftriaxone, and Erythromycin, while 8.69% used Amoxicillin, Ceftinex, and Gentamicin. Furthermore, 4.34% used Cefalexin, Bactrim, Cefaclor, and Neomycin.

RESEARCH RESULTS FOR THE MONTH OF FEBRUARY

During the month of February, there were 15 participants in the study, who are categorized by age as shown in the figure below.

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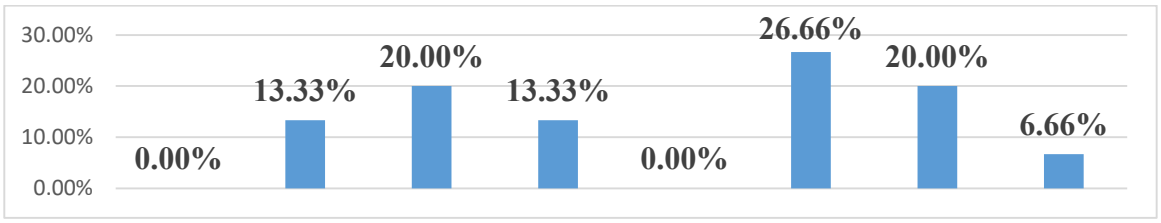

Figure 5. Structure of Study Participation by Age for the Month of February

From the results presented in Figure (5), we can see that the majority of patients were 5 years old, accounting for 26.66% of them, while 13.33% were 1 year and 3 years old. Additionally, 20% of them were 2 years and 6 years old, and 6.66% were 7 years old. There were no participants under 1 year old or 4 years old.

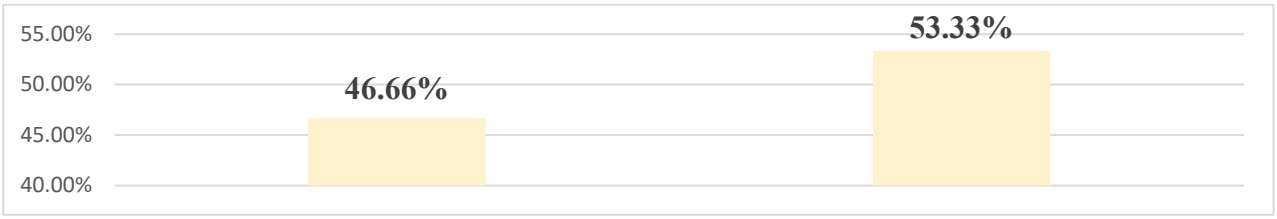

Figure 6. Structure of Study Participation by Gender for the Month of February

According to the results shown in Figure (6), we can see that the participation in the study was almost equal between the two genders. The results indicate that 53.33% of the patients were male and 46.66% were female.

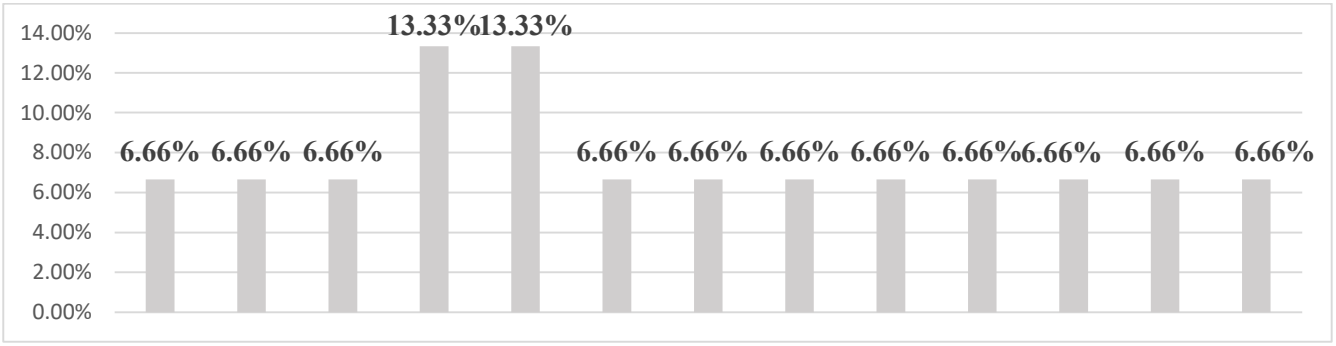

Figure 7. Structure of Study Participation by Diagnosis for the Month of February

According to the research results based on the participants, we have the following findings: the largest portion of them were diagnosed with tonsillitis, nausea, and urinary infections, accounting for 13.33% of the total. Additionally, 6.66% of the participants were diagnosed with inflammation, acute sinusitis, constipation, tonsillitis, acute bronchiolitis, pharyngitis, diarrhea, pharyngitis with headache, gastroenteritis, bronchial asthma, acute cystitis, abdominal colic, and enlarged lymph nodes.

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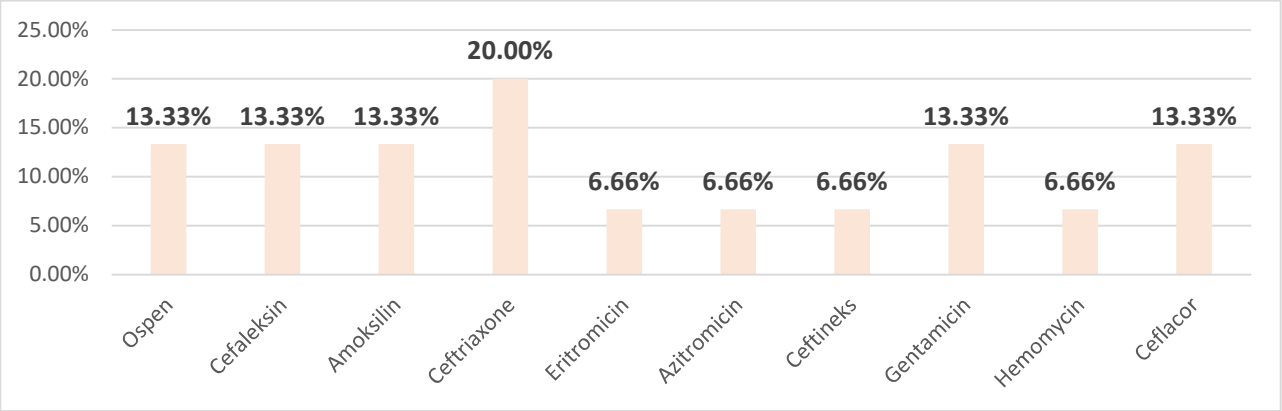

Figure 8. Structure of Study Participation by Antibiotic Use for the Month of February

In Figure (8), the results regarding antibiotic use are presented. From the results, we understand that the most commonly used antibiotic, at 20%, was ceftriaxone. Additionally, 13.33% of the participants used ospen, cefalexin, and amoxicillin. Furthermore, 6.66% of them used amoxicillin, ceftinex, gentamicin, ceflacor, as well as ceftinex and hemomycin.

V. Conclusions And Recommendations

Based on the literature review and data obtained from patients treated at the Family Medicine Center in Arban, Prizren Municipality, we have reached the following conclusions and recommendations:

1. During the period from January to December 2024, patients treated at the Family Medicine Center in Arban have used antibiotics based on their specific health issues.
2. A total of 229 patients with various health problems participated in the study during the same period, all of whom used antibiotics for their treatment.
3. Among all patients aged 0-7 years (i.e., the 229 patients treated at the Family Medicine Center), the most commonly used antibiotics were ospen, baktrim, gentamicin, amoxicillin, azithromycin, erythromycin, ceftinex, ceftixone, hemomycin, ceflacor, and amoxiclav.
4. The majority of patients were diagnosed with the following health issues: inflammation, nausea, diarrhea, acute tonsillitis, acute pharyngitis, urinary infections, bronchial asthma, acute bronchitis, acute cystitis, acute sinusitis, constipation, abdominal colic, gastroenteritis, and nasopharyngitis.
5. In terms of gender, there was a slightly higher percentage of male patients.
6. Among the ages 0-7 years, the most affected age groups were 3 years, 5 years, and 7 years.

VI. Recommendations

Here are some key recommendations regarding the use of antibiotics:

- Antibiotics should not be used without a doctor's prescription.
- Patients should adhere to the complete treatment course (regardless of the duration and dosage).
- The appropriate antibiotic must be used for each type of bacteria.
- Antibiotics should not be used against viruses that cause colds or flu.
- Antibiotics should not be used for common bacterial infections (in cases of bronchitis, sinusitis, and ear infections).

- Care should be taken to receive the recommended vaccinations.

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