



The Relative Cost of Antibiotics for In-Patients Treated in the Pediatric Ward of a Tertiary Health-Care Facility in Southern Nigeria

*Arute J.E¹, Adigom D.O², Adje U.D¹ and Ekakitie E¹

1. Dept of Clinical Pharmacy and Pharmacy Administration, Faculty of Pharmacy, Delta State University, Abraka, Delta State.
2. Dept of Clinical Pharmacy and Pharmacy Practice, Faculty of Pharmacy, Madonna University, Elele, Rivers State.

ABSTRACT

A large proportion of the population in developing countries including Nigeria lacks regular access to medicines for disease treatment. This has been linked to high cost of medications; antibiotics inclusive. We undertook to compare the prices of antibiotics prescribed in the pediatric ward of a tertiary health-care facility in Southern Nigeria, with the internationally accepted prices. In a retrospective cross-sectional study, prescriptions of 800 systematically selected in-patients who received antibiotic therapy in the hospital was evaluated. The cost of the antibiotics were obtained and expressed in a ratio of the international prices as "median price ratio" (MPR). The MPR obtained varied from 0.38 to 13.92 for the 15 antibiotics recorded in the study, with 80% of the antibiotics having prices higher than the international reference prices. The price of ciprofloxacin was found to be up to 14 times the international price. We concluded that most antibiotics studied cost several times more than the international prices.

Keywords: Price, antibiotics, Median Price Ratio, local, international, Nigeria.

INTRODUCTION

A quarter of the world's population is concentrated in developing countries and has access to only a small proportion of the world's drug production [1]. The latter may not be unconnected to the low affordability of medications in developing countries. As antibiotics can account for 25 – 65% of all prescribed medications [2] and 10 – 15% of total health-care cost in the developed societies, while it may be up to 30 – 40% in some developing countries, rational use of antibiotics that will improve quality, increase accessibility and affordability, and equity of health and medical care for the community is of the essence [3].

Despite the suffering from a very high burden of infectious and water-borne diseases, Nigeria has always had limited budget allocated to health care especially for drug procurement over the last decades [4]. Majority of the populace find it difficult to afford medication.

The government of medications due to poor health care budgeting and lack of subsidy. Concerns have therefore been raised on how the cost of medications especially antibiotics would be lowered to make them accessible to average persons.

The monitoring of medications use and knowledge of prescription habits are some of the strategies recommended for curtailing and controlling medication cost and its effect on national budget [5]. It has been observed that antibiotic policies combined with or without other strategies provide a decrease in consumption and thus the cost of drugs [6]. In Turkey, an antibiotic restriction policy was developed by the Ministry of Health in 2003 and was applied to decrease the antibiotic usage and particularly the economic burden of antibiotics [7]. Increasing generic prescribing could also substantially reduce the cost for pharmacies and

The government *For correspondence: E-mail – arute4john@yahoo.com, Phone - +2348037857451



* Corresponding author: E- mail: arute4john@yahoo.com, Phone - +2348037857451

Brand prescribing has been identified as one of the factors that contribute to low affordability of medications in Nigeria [10]. The country is now facing a huge problem that is making accessibility to life-saving drugs difficult. The government ought to use legal tools like compulsory license, parallel imports and subsidies to improve access to essential medicines.

We undertook to compare the prices of antibiotics used in the pediatrics ward of a tertiary health-care facility in southern Nigeria with the respective international reference prices. We sought to determine the antibiotics for which the patients in the health-care facility paid more than the international prices.

METHODS

The study was carried out in the pediatric ward of Federal Medical Centre, Yenagoa, Bayelsa State, Nigeria. It is a Federal Government funded tertiary health-care facility located in the southern part of the country. The pediatric ward of the hospital consists of Ward A and Ward B, with a total of 3 consultants, 10 doctors, 8 house officers, 31 nurses, 8 ward maids and 36 beds.

In a retrospective cross-sectional study, the medical records of 800 admitted patients from January to December, 2009 were evaluated. The prices of the antibiotics used for the year were recorded and expressed as a ratio of the corresponding international prices to obtain the median price ratio

(MPR) as previously described [11]. The local prices were based on the on the hospital's pharmacy prices and were expressed in US dollars. They were divided by the respective international prices in US dollars. These international prices were taken from the 2009 Management of Sciences for Health (MSH) International Drug Price Indicator Guide available at <http://erc.msh.org> or the British National Formulary 2009 edition available at <http://www.bnf.org> for products not available on MSH database. An MPR ratio of 1 means the local price is equivalent to the international reference price.

RESULTS

Table 1 shows the local and international prices per unit of the antibiotics. 15 antibiotics were identified and used for the study. The Median Price Ratios (MPRs) ranged from 0.38 – 13.92, with the patients paying more than the international prices for as much as 80% of the antibiotics. These antibiotics included ciprofloxacin, ceftazidime, cephalexin, ceftriaxone, doxycycline, cefuroxime, gentamicin, ampicillin + cloxacillin, tetracycline, amoxicillin + clavulanate, erythromycin and clarithromycin; in decreasing order of MPR. The local prices of azithromycin, cotrimoxazole and clindamycin were, however, lower than the international prices. The cost of ciprofloxacin was as much as 1392% of the international price.

Table 1: Local versus international price comparison of antibiotics utilized in the pediatrics ward of a tertiary health-care facility in Nigeria

Name of drug	Strength	Local Price per unit (USD)*	International Price (USD)	MPR
Ciprofloxacin O	500mg	4.0	0.2813	13.92
Ceftazidime P	1000mg/vial	14.4	2.2986	6.26
Cephalexin O	500mg	4.0	0.8024	4.99
Ceftriaxone P	1000mg/vial	7.6	2.8327	2.68
Doxycycline O	100mg	0.8	0.3243	2.47
Cefuroxime P	1000mg/vial	14.4	6.1348	2.35
Gentamicin P	80mg/vial	0.48	0.2062	2.33
Ampicillin + Cloxacillin O	500mg	0.8	0.4333	1.85
Tetracycline O	250mg	0.4	0.2365	1.69
Amoxicillin + Clavulanate O	1200mg/vial	7.6	5.4096	1.40
Erythromycin O	250mg	1.1998	0.86	1.40
Clarithromycin O	500mg	14.4	13.9356	1.03
Azithromycin O	200mg/5ml	17.92	27.048	0.66
Cotrimoxazole O	480mg	0.8	1.6088	0.50
Clindamycin O	150mg	0.8	2.128	0.38

USD (\$) 1.00 = ₦125.00; MPR = median price ratio; O = oral; P = parenteral

DISCUSSION

Programs designed to encourage appropriate antibiotic prescriptions in health institutions are important elements in quality of care, infection control and cost containment. The prescribing practices of health practitioners in hospitals may be greatly influenced by the cost of drugs. Medicines are often the largest health-related burdens for poor families, making accessibility to treatment difficult for them [12].

Despite the economic growth in Nigeria in the last few years, the country remains one of the poor countries in the world with over 60% of the population living below the poverty line [13]. The high rate of infectious diseases in the country would have meant that the prices of essential antibiotics would be subsidized to ensure affordability by consumers.

However, this study clearly revealed that there was a relatively higher cost of antibiotics in the facility except for clindamycin, azithromycin and cotrimoxazole. In a study carried out elsewhere in Nigeria, all branded drugs were found to be costlier than in Spain, the lowest price being up to 79 percent decreased compared to Nigeria [14].

Ciprofloxacin is an essential antibiotic drug used to treat a wide range of infectious diseases including diarrheal diseases, sexually transmitted diseases (STIs) and opportunistic infections in people living with HIV/AIDS. In the health-care facility studied, the patients paid up to 14 times the international price for ciprofloxacin. It has also been revealed that the price of ciprofloxacin is beyond the reach of many people in Kenya because of its high cost [15]. The high cost of drugs in Nigeria may be associated with high cost of drug production and importation, which can be linked to poor infrastructure, import duties, security concerns and many local taxes [16]. We have therefore provided evidence for more interventional programs to increase the accessibility and affordability of antibiotics in Nigeria.

CONCLUSION

We conclude that the price of antibiotics in the health-care facility in Nigeria is relatively higher than the internationally accepted prices. The patients paid more than the international prices for ciprofloxacin, ceftazidime, ceftriaxone, doxycycline, cefuroxime, gentamicin, ampicillin + cloxacilin, tetracycline, amoxicillin + clavulanate, erythromycin and clarithromycin in decreasing order, with the price of ciprofloxacin 14 times the international price. Appropriate market interventions such as price controls, compulsory licenses and

legalized parallel trading ought to be made by the government while generic prescribing should be encouraged to respond to the increased prices of antibiotics and drugs in general in Nigeria.

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* Corresponding author: E- mail: arute4john@yahoo.com, Phone - +2348037857451

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