International Journal of General
Medicine and Pharmacy (IJGMP)
ISSN(P): 2319-3999; ISSN(E): 2319-4006
Vol. 4, Issue 2, Mar 2015, 73-80

International Academy of Science,
Engineering and Technology
Connecting Researchers; Nurturing Innovations

CULTURED OF ABUSED AND RESISTANT TO ANTIBACTERIAL DRUGS IN RURAL AND URBAN SETTINGS IN SOUTH WEST NIGERIA

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ABSTRACT

Background: The development of effective and safe drugs to deal with bacterial infections has reduced morbidity and mortality from microbial disease. Nevertheless, the emergence of drug-resistant organisms as a result of environmental flexibility and genetic adaptability had imposes serious constraints on the options available for the medical treatment of many bacterial infections. Bacteria can spread resistance in bacterial populations from person to person. The study aimed at identifying specifics cultural factors, demographic factors and institutional factors in rural and urban settings in Ibadan, Nigeria that favours resistance to antibacterial drugs.

Methodology: The study was conducted in two communities (rural and urban) in Ibadan, Nigeria. Source of drugs for the communities were identified. Ten in-depth interviews and ten key-informants interview were conducted with four Focus Group Discussions (FGDs) respondents. Households' recall and investigation of antibiotics usage in the households in the past Six weeks prior to the study was conducted. The results were analyzed contextually and ethnographically.

Results: The results revealed that 80% of the Households had remnants antibiotics from the previous prescriptions filled. The adherence to antibiotics is very low in both urban and rural communities. The 60% respondents in the rural setting had incomplete filing of prescriptions on antibiotics. The concept of pharmaceutical and community health nursing care was not adhered to in both communities. The respondents' complaint that neither pharmacists nor the community health nurses told them the detailed information on effect of non-adherence and how it can leads to Drug –Resistant-Bacteria ("Superbugs"). Abused is more prevalent in males to females (2:1). In addition, mothers in urban - rural abused was 4:1. Only 20% of the urban mothers have not wrongly used antibiotics on their children. The ratio of abused of antibiotics in educated and non-educated is 1:4, Also, it was discovered that the poor socio-economic status of the respondents was a major hindrance to drug abuse.

Conclusion: Rise in drug-resistant bacteria "superbugs" mainly is a consequence of the overuse, inappropriate, and misuse of antibiotics which cut across geographical, economic and social boundaries in the two communities. The two communities are already reporting ineffectiveness and lack of confidence in the common antibiotics found in the communities. Pharmaceutical and community health nursing care interventions are needed in the communities to safeguard the health of the populace against bacteria resistance.

KEYWORDS: Abused, Resistance, Household's Recall, Pharmaceutical Care, Antibiotics, Prescription Filling

INTRODUCTION

Drugs may be used for curative, suppressive preventive or protective purposes. Although, many diseases are partly or wholly preventable by economic, social and behavioral means. These are seldom adopted and are also slow to take effect. According to Rochon (1999), the benefits of drugs are manifested to pharmacists, doctors, nurses and patients, and of might be thought, obvious to even the most unimaginative people who find themselves dismayed by some aspects of modern technology. The author postulated that a problem free therapy would be one for whom the physician knew exactly what action was needed and used the drug correctly; the drug did that and nothing else; and exactly the right amount of action was easily achieved. It was submitted that these criteria may be completely fulfilled as in streptococcal infection.

Culture is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities acquired by man as a member of society. It encompasses the forms in which men express their feelings about themselves and others and their responses, emotional and aesthetic to the world around them. The components of culture include institutions, ideas, beliefs, knowledge, and values as well as material culture (Ely, 1967). The last century produced improved health care delivery worldwide, in terms of decreased infant mortality rate and increased life expectancy. However, in low-income countries, infectious diseases, that could be prevented if diagnosed and treated early, still account for 45% of the mortality (WHO, 2001). Availability and affordability of antibiotics due to rapidly expanding private health care sector, emergence of arrays of importation of many generic, and sourcing of drugs from many unlicensed premises are now acting as a treat to rationale use of antibiotics (Mattias, 2003). Antibiotics are among the largest group of drugs in use and have, in combination with immunization and improved hygiene, contributed to decreased mortality in infectious diseases. (Col and Connor, 1987; Hardon, 1987 and Kunin, 1993) reported that due to high number of patients, lack of time, inadequate resources and lack of laboratory tests, physicians often feel compelled to prescribe antibiotics to prevent treatment failure due to possible undetected, sub-clinical, or secondary bacteria infection. Self-medication is a low-cost alternative compared with consultation with physicians as consultation fees and waiting time are avoided (Kunin, 1983; Etkin et al, 1990; Paredes et al, 1996; and Igun, 1987). Since antibiotics were first introduced, their consumption has increased dramatically, and in most low-income countries, they constitute the single largest group of drugs purchased (Col & Connor, 1987). Carbon & Bax, (1998) reported that the world market for antibiotics was 17 Billion US Dollar. Antibiotic use is thought to be the key driver of resistance commonly observed in health care institutions (Granizo et al; 2000; Huovinen & Cars, 1998; Kristinsson, 1997). This view was also supported in the study carried out by Lipsiteh & Samore, (2000). High numbers of patients, lack of time, small resources and lack of diagnostic laboratory test are all confounding factors in the abuse of antibiotics. Brugha & Ewi (1998) reported that in low-income countries, there are often lacks of updated, reliable or unbiased sources of information and this factors poses a problem in the public and private sectors, where providers rely mainly on materials provided by the pharmaceutical industry. Paredes et. al, (1996) observed that although physicians knew the correct indication for antibiotics in cases of childhood diarorhea; yet, they still went ahead to prescribe antibiotics unnecessarily. In the opinion of Brugha and Ewi (1998), medical practitioners behaves differently when it comes to antibiotics prescription. Mattias (2003) reported that doctors in private practice are dependent on satisfying patients; hence patients' demand contributes to irrational drug and antibiotic prescription. However, disease-causing microbes that have become resistant to antibiotic drug therapy constitute a public health problem. One part of the problem is that bacteria and other microbes that cause infections are remarkably resilient and have developed several ways to resist antibiotics and other antimicrobial drugs. Therefore, the study aimed at identifying specifics cultural,

demographic, and institutional factors that favour resistance to antibacterial drugs in rural and urban settings in Ibadan, Nigeria.

Significance of the Study

Interdisciplinary survey of the culture of antimicrobial abuse and resistance remains paramount to scientists and health care providers active in these fields. Though, the attention paid was not adequate due to constant introduction of new antibiotics and generic to the populace as a result of free trade due to globalization and need for production of cheaper generic to meet the need of the populace that are financially disadvantaged. Nevertheless, the best prerequisite for the correct choice of an antibiotic, which, at the same time, will be fully active and well tolerated, is an exact clinical and bacteriological diagnosis (Ross, 1992). Increased bacterial resistance is endangering the therapeutic effectiveness of antibiotic, increasing the amount of treatment failures, and as a result, leading to longer and more severe illness episodes with higher costs and mortality rates (WHO, 2001). This is a world-wide problem, which is particularly serious in low-income countries, where many of the affordable antibiotics have become powerless due to resistance, and newer broad-spectrum antibiotics are a burden to the poor (Hardon, 1987 and WHO, 2001). Mattias (2003) reported that self-medication with antibiotics could be prevented by easy access to affordable health care and strict regulations regarding prescription-only drugs. However, in low-income countries, enforcement of prescription regulation may exclude the poorest from accessibility of drugs leading to increased vulnerability to infective disease. The author further stated that, the situation whereby drugs, especially antibiotics, are purchased without restrictions will lead to the present affordable antibiotics to become useless.

METHODOLOGY

The study was carried out in two communities setting, one rural the other urban in Ibadan, Oyo State of Nigeria. The two settings were selected through stratified sampling method. Also through multistage sampling method, ten households were picked for six weeks recall on used of antibiotic. In each setting, a hospital was chosen. The study was non-experimental and employed descriptive research design to describe data. Also, context and ethnographic analysis was used to analyze the data. The survey employed 10 in-depth interviews with policy makers, medical practitioners and community based pharmacists. Ten key-informants interviewed were conducted for Patent Proprietary Vendor License holders (PPMVL holder), Head of Household and Hospitals staff. Four focus group discussion (FGDs) were held with 2 groups of community health nurses, two groups of PPMVL holders and ante-natal women. Ten Household recalls for six weeks were undertaken in both the communities. The key informant interviews and in-depth interviews were analyzed through context analysis and ethnographic summary. This involved verbatim quoting of respondents to buttress certain arguments rose in the course of the study; content analysis involves critical evaluation of the respondents' position on any issue.

RESULTS AND DISCUSSION

The study aimed at identifying specific cultural, demographic and institutional factors in rural and urban setting in Ibadan, Nigeria that favour resistance to antibacterial drugs. The household recall revealed that remnants antibiotics were found in 80% of the respondents. The adherence to antibiotics usage was extremely low - 30% in the rural setting and 70% in urban setting. Incomplete fillings of prescription accounted for 70% of abused of antibiotics in rural setting, whereas, it accounted for 20% in urban area. In both settings, the abuse male to female ratio was 2: 1, and this must have been likely

influenced by the culture of the people in the area in which male dominates most activities in the household. This observation was supported by Mathas (2003) work where it was revealed that 67% of people patronizing private pharmacies for antibiotics self-medication were males. In the rural community, the results further showed that 60% of the respondents had been on antibiotics self-medication six weeks preceding the study. It was also revealed that 80% of the subjects in the urban setting, and 40% in rural were already on antibiotic self-medication prior to their visit to hospitals. According to Lipsiteh and Samora, (2002), frequent antibiotic use, suppresses the susceptible flora, and gives resistance strains a comparable advantage to colonize. This increases the risk of colonization or infection with resistance organisms. The most commonly used antibiotics shown by the results are the beta-lactams ampicillin, amoxicillin, ciprofloxacin and co-trimoxazole as discovered in 85% of the subjects in urban and 65% in rural settings. The majority of the urban setting respondents (68%) were observed to be moving gradually to third generation of antibiotics like cephalosporin due to failure of the common antibiotics they have been using before. This is in line with the observation of Nasrin, Collignon, Wilson, Polotto and Douglas (1999) where it was discovered that antibiotics self-medication usually leads to moving from lower to higher order of antibiotics. It was also discovered that 89% of antibiotic users purchased the drugs from private chemist shops with unqualified personnel. The ability of drug vendors to correctly diagnose and treat the subjects' complaint was worse in the rural setting as emergency cases requiring immediate hospital admission was noticed in 43% cases in the rural, and 5% in urban areas. The health–seeking behaviour of the respondents in 87% of cases in both settings was based on personal decision of what to buy, what the drug vendors believed was appropriate to treat their ailments and the amount of money the subjects could afford at that point in time. This is supported by Kristiansson, Larsson, Finer, and falkenbery (2003) in a similar study. The result revealed that health literacy had positive effect on self-care. Also, engagement in drug vendor and medicine store patronage were greatly influenced by the distance of health care facilities to the residences of the subjects. In 80% of the subjects in the rural compare to 20% in urban settings, the distance to health facilities were responsible for this practices. Therefore people could not be blamed for the practice because in the entire Oluyole local government (rural setting), with over 100,000 residents, there are just 23 Health personnel in the state owned Health facilities. Also, the available local government health centres were not in operation most of the time due to industrial strike embarked upon by the health personnel on frequent basis. Similarly in Ibadan North West (an urban setting) with four State owned Health facilities (MOH, 2009) and 557 health personnel, the issue of frequent industrial strike shifted the subjects' attention to self-medication and patronage of drug vendors. This could have aided resistance to the antibiotics being abused. This may constitute problem to eradication of infectious diseases by the time second and third line antibiotics been abused to the point of resistance to the drugs. It is not just over the counter medicines but also prescription antibiotics are also abused. Pressure to use cheaper and efficiency-proven drugs usually lead health care providers to over-prescribe certain varieties of antibiotics, making them less effective.

Table 1 shows the source of antibiotics being abused by the two communities.

Table 1: Sources of Antibiotics Being Abused by the Two Communities

Community	Medicine Shops	Pharmacies	Hospitals	Total
Rural Community	65	5	30	100
Urban Community	30	30	40	100

Results of interview with health care practitioners – pharmacists, community health nurses and doctors working in the two communities revealed some reasons why people engaged in self-medication.

The results of informants interviews showed that some cultural factors affect the used of antibiotics in the two communities; and references were made to some specific antibiotics. In fact, one of the respondents had this to say:

"Family adherence to a particular antibiotics that is magical for the family, especially in dental therapy, is highly prevalent in this community"

Another health care worker interviewed on patients' use of antibiotics responded as follows:

"Assumptive treatments are becoming habits in my clients, they will not visit the clinic until they observed failure in their self-medication habits. Nearly 70% of my clients would have taken one antibiotics or the other as a preventive measure before visiting the clinic"

In another interview session, a respondent in a rural setting reported that:

"Antibiotics are wonder in this community, they are cheap, readily available in different ranges and easy to use for adult and children. Also one can combined them together for efficacy. Indeed, they are wonderful drugs"

Truly antibiotics used are common in most societies in developing countries and people have unrestricted access to them at any time they need them. The government control in form of disallowing non pharmacists to sell the drugs is not really effective in developing countries like Nigeria. WHO (2000) said 45% of the mortality in low-income diseases are due to infection and that antibiotic are often indicated. Similarly, Col and Conor (1987) and Carbon and Bax (1998) reported that antibiotic are the highest selling drugs in the world and their market for 1997 alone yielded 17 billion USD in the world.

Focus group discussion sessions were also organized separately in rural and urban settings. 20 People each in the two communities that regularly patronize medicine shops were identified and were constituted as members of the FGDs

The results of the FGDs showed that antibiotics use was prevalent and becoming socio-cultural issue in the two communities. Also, antibiotic use has been identified by both groups as the key driver of resistance. Summary of one of the FGDs was that:

"We identify antibiotics with different names based on colour, names and activities in our community; but these days due to counterfeits and fake products, we are observing failures and less effectiveness of these wonderful drugs in our community."

Lipsiteh and Samore (2000) has discovered that resistance to most hitherto difficult-to-treat ailments occur as a results of overuse of common antibiotics. In the FGD, a respondents had this to say

"Antibiotic drugs are a class of irrationally drugs. Due to my own cultural orientation from daily used of herbs and herbal products, I don't usually use them. However, whenever herbs are failing to cure my ailment, I usually use trice the dose being prescribe for me in the hospital"

From this statement, it is not difficult to deduce that such practices contribute immensely to resistance of drugs to infection. Mattias (2003) reported that H. influenzae now appears to be highly resistance against chloramiphencol penicillin and ampicillin. The traditional strategy of initiating treatment of serious and invasive infections such as meningitis with a combination of these drug might no longer be effective. Community resistance is very high now to trimethoprim/sulphamethazol and ampicillin. From the results of the study, it was observed that Cephalexin were highly

dispensed in both communities due to free drugs policy of the state Government. However, increased used of cephalexin poses a great danger of resistant strains, especially if not restricted to Hospital setting. The demographic factors such as age and sex has significant effect on abuse of antibiotics. (P are 0.009 and 0.007 respectively). The effects of abuse of antibiotics were more among people of age group 30 – 55. Also, Men to women ratio in antibiotics abuse is 2:1. The proportion of the abuse among women in urban to rural is 4:1. This may be due to relatively strong economic power of the urban women as well as the availability of antibiotics at their disposal of urban environment. Also, 20% of the urban women are found to have used antibiotics incorrectly on their children compared to 60% in rural women. This can be explained by the relatively higher level of education, high socio-economic status and availability of health care personnel in the urban setting. According to Oyo state Ministry of Health (2009), Oluyole Local Government (rural setting) had 29 health care workers while the number of health personnel in Ibadan North West was 557. Therefore, it is logical that the people in the urban settings in this study has advantage of receiving care from health personnel than their counterparts in the rural setting.

The ratio of antibiotics abused in the two communities between literates and illiterates is 1:4 Non-educated used antibiotics indiscriminately compared to educated ones.

Table 2: Number of Health Care Institutions in the Two Communities

Health Care Institutions	Urban Setting (Ibadan North West Local Government Area)	Rural Setting (Oluyole Local Government Area)
Federal Governments Owned	4	1
State Government Owned	3	1
Local Government Owned	6	23
Registered Private	35	33
	48	58

Though the health facilities in rural area are more in number, the quality of services provided was not found adequate. The health care institutions in the rural setting are not adequately monitored by the relevant agencies. Some of those institutions were deserted by the community due to poor staffing and obsolete equipment.

CONCLUSIONS

Rise in drug-resistant bacteria mainly is a consequence of the overuse, inappropriate and misuse of antibiotics. This was found to cut across geographical, economic and social boundaries in the two communities. The two communities were already reporting ineffectiveness and lack of confidence in the common antibiotics found in the communities. Pharmaceutical and nursing care interventions are needed in the communities to safeguard the health of the populace against bacteria resistance. The study revealed that there is discrepancies between knowledge and practice among healthcare providers and poor health literacy in the two communities.

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