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Identification of Factors Contributing to the Misuse of Antimicrobial Agents Among Residents of a Riverine Community in South-South Nigeria

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Abstract

This study assessed the knowledge, usage and resistance of antimicrobials among residents of Abonnema in Akuku- Toru Local Government Area of Rivers state, Nigeria**.** The study design is a descriptive study**.** A sample size of 252 was used while semi structured questionnaire was used to obtain data from the respondents. Frequency, percentages, and Chi-square statistics were used to analyze the data obtained. The results revealed that, majority (95%) had adequate level of knowledge of antimicrobial. Majority experienced side effects of vomiting after taking antimicrobial; 4.4% had fever, 2.0% coughed, 1.2% experienced drowsiness and 17.5% had other side effects. 1.6% had taken Flagyl, 0.8% Septrin, 0.4% Fluconazole, 0.4% Albendazole, 0.8%Tetracycline, 0.8% Clotrimazole, 0.8% have taken ACT and 3.2% took another antimicrobial with 91.0% haven taken more than one antimicrobial combination. The study also revealed that the practice of antimicrobial usage revealed that majority 89 (35.3%) visited medicine shop. Majority of the respondents 66.3% complied with prescription instruction. The study concluded that there is high level of knowledge of antimicrobial, its usage and the resistance associated with it. It was recommended that there should be public enlightenment regarding the importance and dangers associated with antimicrobial use.

Keywords: Antimicrobial, Drugs, Knowledge, Prescription, Resistance

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INTRODUCTION

Abonnema Community, like many other regions in Nigeria, faces challenges related to antimicrobial resistance. However, there is a lack of comprehensive data on the knowledge usage and antimicrobial resistance among residents of Abonnema community in Akuku-Toru local

government area of Rivers State and practices of antimicrobial usage among the residents.[1]

Many individuals in Abonnema may not be aware of the concept of antimicrobial resistance and the risks associated with the misuse and overuse of antimicrobial agents, including antibiotics and there is a lack of understanding about the appropriate use of antimicrobial medications, including dosage, duration, and adherence to prescribed regimens.[2] This may result in improper use, which can contribute to the development of antimicrobial resistance. The accessibility of antimicrobial drugs in the community, including over-the-counter availability, may lead to their misuse or self-medication without proper medical consultation, also the use of traditional and alternative medicines in the local community may interact with antimicrobials, affecting their efficacy and safety.[3]

Understanding the healthcare practices, including prescribing habits of healthcare providers in the area, is crucial for assessing the potential sources of inappropriate antimicrobial use. Therefore, the researcher seeks to evaluate the level of knowledge, usage and antimicrobial resistance among residents of Abonnema community in Akuku-Toru Local Government Area of Rivers State.[4,5] In order to identify potential factors contributing to the misuse and overuse of antimicrobials, examine the potential health implications of the current level of knowledge and practices regarding antimicrobial usage and resistance in Abonnema and identify strategies or interventions that could be implemented to improve awareness and promote responsible antimicrobial usage in the local area.[6,7]

Objective

The aim of the study is to assess the knowledge, usage and antimicrobial drugs among Residents of Abonnema community in Akuku-Toru Local Government Area of Rivers State. The specific objectives of the study include:

1. Identify factors contributing to the misuse of antimicrobials drugs among Residents of Abonnema LGA of Rivers State.
2. Identify strategies that could be implemented to improve awareness and promote responsible antimicrobial usage among Residents of Abonnema LGA of Rivers State.

Theoretical Framework

A theoretical framework provides a foundation for understanding and analyzing the relationships between variables in a research study. In the context of "knowledge, usage and antimicrobial resistance among residents of Abonnema community in Akuku-Toru Local Government Area of Rivers State, several theories or models can be applied to guide the research and interpret its findings but the study used the Health Belief Model (HBM).[8]

Health Belief Model (HBM)

The Health Belief Model guided the study. The Health Belief Model is a psychological framework that explores how people's beliefs and perceptions about health risks and benefits influence their health-related behaviors. In the context of antimicrobial usage and resistance, the HBM can be used to assess how individuals' perceived susceptibility to antibiotic-resistant infections and the perceived severity of AMR impact their knowledge and practices/

Application of the Health Belief Model to the Study

The Health Belief Model (HBM) is a valuable framework for understanding and promoting health-related behaviors, including knowledge of antimicrobial usage and antimicrobial resistance (AMR). Applying the HBM to the topic in the Abonnema community in Akuku-Toru Local Government Area of Rivers State involves examining key components within the model:

Perceived Susceptibility: In the context of antimicrobial usage and Antimicrobial resistance, this component addresses the community's perception of how vulnerable they are to antibiotic-resistant infections. In Abonnema, residents might consider their risk of experiencing such infections based on factors like healthcare practices, sanitation, and disease prevalence.

Perceived Severity: This element reflects the community's perception of the seriousness of Antimicrobial resistance and its consequences. It encompasses understanding the impact of ineffective antibiotics on individual health and the wider community, such as increased mortality rates.

Perceived Benefits: Residents in Abonnema need to understand the benefits of responsible antimicrobial usage, such as more effective treatment, reduced treatment costs, and overall improved community health. Highlighting these benefits can encourage proper antimicrobial usage.

Perceived Barriers: Identifying the barriers to responsible antimicrobial usage is essential. In the Abonnema community, these barriers may include access to healthcare facilities, affordability of

medications, or cultural beliefs that influence treatment-seeking behaviors.

Cues to Action: Encouraging cues to action, such as community health education programs, local media campaigns, and information from healthcare providers, can help Abonnema residents make informed decisions about antimicrobial usage and understand the consequences of antimicrobial resistance.

Self-Efficacy: Self-efficacy involves individuals' belief in their ability to take recommended actions. Interventions should focus on empowering Abonnema residents with the knowledge and skills to use antimicrobials responsibly and seek appropriate medical advice.

To effectively apply the Health Belief Model to address knowledge of antimicrobial usage and antimicrobial resistance in the Abonnema community, the following steps can be taken:

Assessment: Conduct a comprehensive assessment of the community's knowledge, attitudes, and behaviors regarding antimicrobial usage and Antimicrobial Resistance. This may involve surveys, focus groups, and discussions with local healthcare providers.

Educational campaigns: Develop and implement targeted educational campaigns that emphasize the severity of AMR and the benefits of responsible antimicrobial usage. Use local channels, community leaders, and healthcare providers to disseminate this information effectively.

Access and affordability: Address barriers related to access to healthcare and affordability of medications. This could involve the government and local health organizations working to improve healthcare infrastructure and affordability.

Behavior changes interventions: Implement behavior change interventions that focus on building self-efficacy. These interventions may include community workshops, training programs, and awareness-raising activities.

Monitoring and feedback: Continuously monitor the impact of the interventions and gather feedback from the community. Adapt the programs based on the results to ensure their effectiveness.

Partnerships: Collaborate with local healthcare providers, community leaders, and government agencies to ensure a coordinated effort to combat AMR and promote responsible antimicrobial usage.

Applying the Health Belief Model in the Abonnema community can help to improve knowledge of antimicrobial usage and awareness of AMR, leading to more responsible behaviors and better public health outcomes.

Empirical Review

Samreen *et al.* (2021) conducted a study on the "Environmental antimicrobial resistance and its drivers: a potential threat to public health" Imprudent and overuse of clinically relevant antibiotics in agriculture, veterinary and medical sectors contribute to the global epidemic increase in Antimicrobial Resistance (AMR). There is a growing concern among researchers and stakeholders that the environment acts as an AMR reservoir and plays a key role in the dissemination of Antimicrobial Resistance Genes (ARGs). Various drivers are contributing factors to the spread of antibiotic-resistant bacteria and their ARGs either directly through antimicrobial drug use in health care, agriculture/livestock and the environment or antibiotic residues released from various domestic settings.[10] Resistant microorganisms and their resistance genes enter the soil, air, water and sediments through various routes or hotspots such as hospital wastewater, agricultural waste or wastewater treatment plants. Global mitigation strategies primarily involve the identification of high-risk environments that are responsible for the evolution and spread of resistance. Subsequently, AMR transmission is affected by the standards of infection control, sanitation, access to clean water, access to assured quality antimicrobials and diagnostics, travel and migration. This review provides a brief description of AMR as a global concern and the possible contribution of different environmental drivers to the transmission of antibiotic-resistant bacteria or ARGs through various mechanisms. We also aim to highlight the key knowledge gaps that hinder environmental regulators and mitigation strategies in delivering environmental protection against AMR.[11]

Vazquez-Cancela *et al.* (2021) conducted a study on 'Factors determining antibiotic use in the general population: A qualitative study in Spain.' Antibiotic resistance is an important Public Health problem and many studies link it to antibiotic misuse. The population plays a key role in such misuse. The objective of the study was to explore the factors that might influence antibiotic use and resistance in the general population. Qualitative research using the focus group (FG) method. Groups were formed by reference to the following criteria: age (over and under 65 years); place of origin; and educational/professional qualifications. FG sessions were recorded, transcribed and then separately analyzed by two researchers working independently. Written informed consent was obtained from all participants. Results revealed that eleven FGs were

formed with a total of 75 participants. The principal factors identified as possible determinants of antibiotic misuse were: (i) lack of knowledge about antibiotics; (ii) doctor-patient relationship problems; (iii) problems of adherence; and, (iv) use without medical prescription. Antibiotic resistance is a phenomenon unknown to the population and is perceived as an individual problem, with the term "resistance" being confused with "tolerance". None of the groups reported that information about resistance had been disseminated by the health care sector. The study was concluded that the public is unaware of the important role it plays in the advance of antimicrobial resistance. There is evidence of diverse factors, many of them modifiable, which might account for antibiotic misuse. Better understanding these factors could be useful in drawing up specific strategies aimed at improving antibiotic use.[12]

Sharma *et al.* (2023) conducted a study on the 'The Challenge of Antimicrobial Resistance in the Indian Healthcare System" and explained that the emergence and rapid spread of antimicrobial resistance (AMR) pose a grave threat to public health globally, and particularly so in India. With its unique combination of a dense population, a significant disease burden, and diverse healthcare practices, India stands at a critical juncture in the global battle against AMR. The implications of this escalating crisis are far-reaching, threatening decades of medical progress, undermining healthcare delivery, and posing potential roadblocks to the realization of several Sustainable Development Goals. AMR is a crisis within the Indian healthcare system as it severely hampers the effective treatment of infectious diseases, leading to higher mortality rates, longer hospital stays, and increased healthcare costs. Its rise could mark the return of the pre-antibiotic era, where common infections and minor surgeries could once again become life threatening.[13] Addressing the challenge of AMR in India requires a comprehensive, multifaceted, and well-coordinated response. From creating strong regulatory frameworks for antibiotic usage and improving diagnostic capabilities to fostering greater public awareness and promoting research into new antimicrobials, the strategies need to be as diverse and interconnected as the problem itself. This editorial will delve into the specificities of the AMR challenge within the Indian healthcare system, discuss potential strategies for mitigating the crisis, and evaluate the broader implications for public health and national policy. It will also highlight why India's response to this global health threat is crucial not only for the country but for the world at large.[14]

Bishop *et al.* (2018) conducted a study on "Community pharmacy interventions to improve antibiotic stewardship and implications for pharmacy education: A narrative overview". Antibiotic resistance is one of the world's most pressing public health problems, resulting in over 23,000 deaths per year. One of the main contributing factors to antimicrobial resistance is antibiotic misuse and overuse. Community pharmacists can play a role in reducing antibiotic resistance, since they are one of the most accessible healthcare professionals. The purpose of this paper is to describe community pharmacy interventions and strategies to reduce antibiotic misuse and overuse and to discuss the implications for pharmacy training. A narrative overview strategy was employed to identify papers on antibiotic stewardship and the role of the community pharmacist. Our review examined potential stewardship strategies and interventions within community pharmacy practice that provide opportunities for pharmacists to engage or lead in the reduction of antimicrobial resistance. Five promising community pharmacist-led intervention strategies were described: Collaborative Practice Agreements (CPAs), Point-of-care (POC) testing, patient consultations, academic detailing and serving as an advocate for patients and other healthcare providers. The study was concluded that, the highlights topics may warrant increased attention in pharmacy school curricula. Pharmacy schools may want to consider modifying their curricula to address the shifts in practice of the community pharmacist - emphasizing the expanded role of the pharmacist in patient care and public health issues such as outpatient antibiotic stewardship.[15]

Lee *et al.* (2013) conducted a study on the "strategies to minimize antibiotic Resistance". The authors explained that Antibiotic resistance can be reduced by using antibiotics prudently based on guidelines of antimicrobial stewardship programs (ASPs) and various data such as pharmacokinetic (PK) and pharmaco-dynamic (PD) properties of antibiotics, diagnostic testing, antimicrobial susceptibility testing (AST), clinical response, and effects on the microbiota, as well as by new antibiotic developments. The controlled use of antibiotics in food animals is another cornerstone among efforts to reduce antibiotic resistance. All major resistance-control strategies recommend education for patients, children (e.g., through schools

and day care), the public, and relevant healthcare professionals (e.g., primary-care physicians, pharmacists, and medical students) regarding unique features of bacterial infections and antibiotics, prudent antibiotic prescribing as a positive construct, and personal hygiene (e.g., hand washing). The problem of antibiotic resistance can be minimized only by concerted efforts of all members of society for ensuring the continued efficiency of antibiotics.[16]

Research Design

In order to achieve the objectives of this study, a cross-sectional descriptive research design was used. This method was used because it allows for systematic collection and presentation of data, interpretation and reporting of facts about the subject with little or no control. This design aimed at eliciting required responses from the respondents, which helped the researchers to identify the knowledge, usage and antimicrobial resistance among residents of Abonnema community in Akuku-toru Local Government Area of Rivers State.

Area of the Study

The study was conducted in Abonnema community in Akuku-Toru Local Governement Areas of River State, situated in the Niger Delta region of the South-South geopolitical zone of the country, Nigeria.

Population of the Study

The population of the study consisted of all male and female adult residents in Abonnema community totaling 15,000 residents as at the 2006 Census.

Sample size and Sampling Techniques

A sample size of 252 respondents was used. Purposive and convenience sampling technique was used to select 252 respondents to ensure proper representation of the male and female sample from the community.

Instrument for Data Collection

The instrument used for data collection is a self-designed Questionnaire titled Factor Contributing to Misuse of Antimicrobial Agents Scale (FCMAAS). The questions were structured such that it enabled the researchers to easily elicit information from the respondents according to the objectives of the study. Closed ended questions were used in the questionnaire. The questionnaire was preferred because it gives clear and specific responses.

The FCMAAS consisted of three sections: section A consist of four items about the demographic data of the respondents. Section B consisted of five items about the factors contributing to the misuse and overuse of antimicrobials. In addition, section D consist of 10 items about the strategies employed to prevent the antimicrobial misuse.

Validity of the Instrument

The validity of a research study refers to how well the results among the study participants represent true findings among similar individuals outside the study (Patino & Ferreira, 2018). The researchers' self-constructed questionnaire was presented other experts for face and content validation who ascertained the appropriateness of the contents.

Reliability of the Instrument

The reliability of the instrument refers to the degree of consistency and stability was obtained from through a pilot study of 10 percent of the sample of Abonnema community in Akuku Toru Local Government Area of River State, using Pearson Product moment correlation coefficient that showed the reliability coefficient of 0.91. Therefore, the instrument was termed to be reliable. The instrument was administered twice within a two week interval (test re-test) before computing the correlation between the two groups of data.

Method of Data Collection

Copies of the questionnaires were administered to the respondents with the help of a Research Assistant. Verbal ethical clearance was given by the community leader, the *Amanyanabo* of Abonema.

Method of Data Analysis

The returned copies of the questionnaire were sorted out and information extracted were analyzed using frequency, percentages, and were presented in tables. Chi square test were used to analyze the hypothesis at 0.05 alpha level of significance.

RESULT OF DATA ANALYSIS

Table 1. Percentage Distribution of Socio-Demographic Characteristics of Participants (N=252)

Variables	n (%)
Age (years)	
10-30	116(46.0)
31-50	82(32.5)
51-70	44(17.5)
≥71	16(4.0)
Gender	
Male	120(47.6)
Female	132(52.4)
Education	
Primary	32 (12.7)
Secondary	155 (61.5)
Tertiary	65 (25.8)
Occupation	
Business	112(44.4)
Employed	34(13.5)
Unemployed	52(20.6)
Students	46(18.3)
Retirees	8(3.2)

Distribution of Socio-Demographic Characteristics of Participants

Demographic characteristics of participants include age, gender, occupation and education. The study revealed that a majority of the study participants were of age 10-30 years (46.0%). This study showed that the female gender of 52.4% are the majority among the respondents. The study shows that majority of the respondents (44.4%) of the respondents were in different businesses, 13.5% were employed, 20.6% were unemployed, 18.2% were students, and 3.2% of the respondents were retirees. This study revealed that majority (61.5%) of the respondents attended Secondary School.

Table 2. Percentage Responses of Factors Contributing to the Misuse of Antimicrobial Drugs.

Respondents View on the Factors Contributing to the Misuse and Overuse of Antimicrobial Drugs	Frequency	%
Have you or someone you know ever used antimicrobial drugs (e.g antibiotics) without a prescription?		
Yes	58	23.0
No	194	77.0
Total	**252**	**100**
If yes, what were the reason for using antimicrobial drugs without a prescription save time by avoiding a doctor's visit		
To save money on consultation fees	132	52.4
Previous experience with the same illness	80	31.7
Recommendation from family or friends	20	7.9
Belief that a prescription was unnecessary	3	1.2
Difficulty accessing healthcare services	15	5.9
To relieve symptoms quickly	5	1.9
Total	**252**	**100**
What factors in your opinion may contribute to the misuse and overuse of antimicrobial drugs in this community?		
Lack of access to healthcare facilities	5	2.0
Lack of awareness about the consequences of misuse	10	4.0
Socioeconomic factors	197	78.2
Pressure from friends or family	10	4.0
Belief that antimicrobials can treat any illness	10	4.0
Limited healthcare infrastructure	20	7.9
Total	**252**	**100**

Are you aware of the potential consequences of antimicrobial resistance, such as decreased effectiveness of antibiotics and the spread of drug-Resistant infections?		
Yes	222	88.1
No	30	11.9
Total	**252**	**100**
Do you think antimicrobial resistant is a significant concern in Abonnema community?		
No	235	93.3
Yes	17	6.7
Total	**252**	**100**

Table 2 outlines respondents' perspectives on factors that contribute to the misuse and overuse of antimicrobial drugs. The data reveals that a significant majority of respondents (77%) have either used or know someone who has used antimicrobial drugs without a prescription, while only 23% indicated they had not.

For those who used antimicrobials without a prescription, the primary motivations included saving time by avoiding doctor visits (52.4%) and saving money on consultation fees (31.7%). Other less common reasons were based on prior experience with the illness (7.9%), recommendations from family or friends (1.2%), and difficulty accessing healthcare services (1.9%), with only a small percentage believing a prescription was unnecessary (5.9%).

When asked about general factors that may contribute to antimicrobial misuse in the community, 78.2% of respondents cited a lack of access to healthcare facilities, marking it as the predominant factor. Additionally, 10% identified socioeconomic factors, while 4% each mentioned lack of awareness about misuse consequences, family or friend pressure, and belief that antimicrobials can treat any illness. Limited healthcare infrastructure was noted by 7.9% of respondents, making it a less common but notable factor.

Regarding awareness of antimicrobial resistance consequences, 88.1% of respondents indicated they were aware of issues such as decreased antibiotic effectiveness and drug-resistant infections, while 11.9% were unaware. Lastly, a vast majority of 93.3% acknowledged that antimicrobial resistance is a significant concern in the Abonnema community, with only 6.7% disagreeing.

The data emphasizes that most respondents have experience with or knowledge of antimicrobial misuse, with limited healthcare access, time and cost-saving motives, and low infrastructure quality as key drivers. The least common factors were family or friend recommendations and the belief that prescriptions are unnecessary.

Table 3. Strategies to prevent the antimicrobial misuse, improve awareness and promote responsible antimicrobial usage among Residents of Abonnema LGA of Rivers State.

Respondents View on the Strategies to Prevent Antimicrobial Misuse	**Frequency**	**%**
Have you come across any educational campaigns? Or initiatives related to antimicrobial usage and Resistance in your local area		
Yes	200	79.4
No	52	20.6
Total	**252**	**100**
What strategies or intervention do you believe would? be most effective in raising awareness about responsible antimicrobial usage in your local area		
Educational campaigns	50	19.8
Workshops and training sessions	40	15.9
Community health outreach programs	30	11.9
Engaging healthcare professionals in awareness initiatives	40	15.9
Media campaigns (e.g radio, TV, social media)	20	7.9
School curriculum integration	35	13.9
Involving local leaders and community influencers	30	11.9
Public signage in healthcare facilities	7	2.8
Total	**252**	**100**

Which age groups or demographic segments in your community should be the primary focus of awareness initiatives?		
Children	25	9.9
Adolescents	24	9.5
Adults	50	19.8
Elderly	43	17.1
Healthcare providers	10	4
All age groups	100	39.7
Total	**252**	**100**
Do you believe the community is receptive? To education and awareness initiatives related to responsible antimicrobial usage		
Yes	230	91.3
No	22	8.7
Total	**252**	**100**
Do you think antimicrobial resistance, Is a significant public health concern?		
Yes	200	79.4
No	52	20.6
Total	**252**	**100**
Where do you usually get information? About health and medication		
Healthcare professionals	100	39.7
Family and friends	80	31.7
Social media	20	7.9
Television or radio	10	4.0
Internet	5	2.0
Local Government sources (Town crier)	37	14.7
Total	**252**	**100**
Have you come across any information? Or educational campaigns regarding Antimicrobial resistance in your local area		
Yes	241	95.6
No	11	4.4
Total	**252**	**100**

Table 3 provides an overview of residents' views in Abonnema Local Government Area, Rivers State, on strategies to prevent antimicrobial misuse, improve awareness, and promote responsible antimicrobial usage. Most respondents (79.4%) had encountered educational campaigns or initiatives related to antimicrobial usage and resistance in their local area, while a minority (20.6%) had not.

When asked about the most effective strategies to raise awareness on antimicrobial use, the largest percentage (19.8%) favored educational campaigns, followed by workshops and training sessions (15.9%) and engaging healthcare professionals in awareness initiatives (15.9%). Smaller groups supported community health outreach programs (11.9%), school curriculum integration (13.9%), and involving local leaders and influencers (11.9%). Media campaigns (7.9%) and public signage in healthcare facilities (2.8%) were the least chosen options.

Regarding the primary demographic focus for awareness initiatives, a substantial proportion (39.7%) felt that all age groups should be targeted. Among specific groups, adults (19.8%) and the elderly (17.1%) were seen as priorities, while children (9.9%), adolescents (9.5%), and healthcare providers (4%) were deemed less critical.

The vast majority of respondents (91.3%) believed the community was receptive to education on responsible antimicrobial usage, whereas a small group (8.7%) did not share this view. Additionally, most respondents (79.4%) considered antimicrobial resistance a significant public health concern, though 20.6% disagreed.

When asked about sources of health and medication information, the majority (39.7%) cited healthcare professionals as their primary source, followed by family and friends (31.7%). Other sources included social media (7.9%), local government announcements like town criers (14.7%), television or radio (4.0%), and the internet (2.0%).

Finally, a large majority (95.6%) had come across information or campaigns on antimicrobial resistance locally, with only 4.4% reporting no exposure to such information

Distribution of Socio-Demographic Characteristics of Participants

This study recruited 252 participants, considering demographic characteristics such as age, gender, occupation and education, with 46.0% being between the age of 10-30 years, the most respondents, and the respondents mostly being females, 52.4%. The finding regarding the age range in this study agrees with that of a related study by Okedo-Alex *et al*. (2019) among the medical students in a Medical school in eastern Nigeria, but does not conform to the majority female population of this study. It is important to note that the respondents in both varied; general population versus medical students. This could have played a role in the observed variation, as setting is critical for the kind of result obtained.

Factors contributing to the misuse and overuse of antimicrobials.

The Practice of antimicrobial usage by residents of Abonnema community revealed that 62(24.6%) respondents consulted a doctor for prescription, 42(16.7%) met nurses, 18(7.1%) consulted Pharmacists, 89(35.3%) consulted medicine shop, 8(3.2%) self-prescribed, while 33(13.1%) consulted either Doctor or Pharmacist for prescriptions. Antimicrobial agents are serious medicines and should be prescribed a professional. However, it most localities, self-prescription and visiting a medicine shop is a common practice, not minding that such practices could result in deleterious consequences, with occasional fatality. Owing to factors such as poverty, poor educational status, ignorance and poor attitude, many people in developing nations prefer to patronize quacks, at the detriment of their health and life. In an Ethiopian study conducted by Simegn and Moges (2022), it was reported that majority of the respondents patronized the services of medicine shop and chemists for counseling and prescription for antimicrobial agents.[17] This is therefore in support of the finding of this work, even though they were both conducted in distinct climes. This practice could also be common in the rural or semi-urban settings. This study suggests that 38.1% of the respondents takes antimicrobial drugs when ill only, 1.6% takes it regularly, 40.9% takes it occasionally and 19.4% of the respondents never took any antimicrobial drugs in any condition. The abuse of antimicrobial agents is evident in most societies, even for common conditions, and sometimes for non-indicated conditions.[18] It is further reported that this situation is more prevalent in developing than developed countries, which could have arisen from lack of enlightenment or ignorance from the aspect of the population. This majority occasional use of antimicrobial agents observed in this study also reported by Awosan *et al*. (2019) in a related study conducted in Sokoto state, Northern Nigeria, and is affirmative a common practice among residents of the country where this study emanated from. Most of the respondents, 61.5% checked for the expiring date of antimicrobial agents when given, but 38.5% do not check for the expiring date. This could be due to enlightenment by the relevant authorities. The National Agency for the Administration of Food and Drug [NAFDAC] Undertakes regular enlightenment of the populace in Nigeria regarding the importance of foods and drugs consumed, as well as, admonishing health professionals, community leaders and opinion leaders on the importance of advising their clients and wards on the importance of drug use, including antimicrobials. This study also revealed that 66.3% of the respondents affirmed that they comply to prescription and instruction, 20.6% occasionally comply to prescription and instruction, but 13.1% initially comply and later fail to comply to the prescription and instruction, while 20.6% are not duly educated by the person(s) prescribing, 34.9% lacks fund to purchase the drugs and 44.4% easily forgets to adhere to prescriber instructions. Compliance and adherence are interchangeably used but deals with the ability to abide by directions and regulations concerning the use of drugs. Education, social status, environment and financial status affect the attitude of seeking healthcare and abiding to tenets laid down. Urban setting, good education and financial and social status enhance the uptake and compliance to medications. Thus, the improved compliance observed in this study could have been due to these enhancing factors in the study location.

The empirical findings from the studies by Bishop *et al.* (2018) and Lee et al. (2013) align closely with the data gathered from residents of Abonnema Local Government Area in Rivers State, regarding strategies to prevent antimicrobial misuse and promote responsible antibiotic use.[19]

Bishop *et al. (*2018) focused on the potential role of community pharmacists in improving antibiotic stewardship. The study found that community pharmacists, being highly accessible, can influence public behavior regarding antibiotic use. Five key intervention strategies were recommended, including Collaborative Practice Agreements (CPAs), point-of-care testing, patient consultations, academic detailing, and advocating for patient and

provider awareness. These strategies underscore the importance of educational initiatives and pharmacist-led outreach as part of an effective stewardship approach, which aligns with the Abonnema study, where educational campaigns (19.8%) and workshops or training sessions (15.9%) were among the top strategies chosen by residents to improve antimicrobial awareness. Engaging healthcare professionals in awareness initiatives was similarly valued, chosen by 15.9% of respondents. This supports Bishop *et al.'s* conclusion that pharmacists and healthcare professionals play a crucial role in preventing antibiotic misuse and improving public knowledge.[20]

Lee *et al*. (2013**)** explored strategies to reduce antibiotic resistance through prudent antibiotic use, guided by stewardship program recommendations. The study emphasized the need for education across demographics, including public awareness on proper hygiene and knowledge of bacterial infections. This aligns well with findings from the Abonnema study, where all age groups (39.7%) were highlighted as primary targets for antimicrobial awareness. Additionally, adults (19.8%) and the elderly (17.1%) were considered priorities, suggesting that Abonnema residents recognize the need for a comprehensive and inclusive public education approach. This resonates with Lee et al.'s suggestion that education should span from children to healthcare providers to ensure antibiotic efficacy is preserved.[21]

Abonnema Findings in Context: The findings from Abonnema reveal strong community awareness, with 79.4% of residents acknowledging antimicrobial resistance as a major public health issue and 95.6% reporting exposure to information on antimicrobial resistance. This aligns with Lee et al.'s emphasis on the importance of community-wide education. Both studies affirm the significance of educating and involving all community members and healthcare providers to combat antibiotic resistance.

Overall, both empirical studies support the value of a multi-pronged approach involving healthcare professionals, educational campaigns, community outreach, and demographic-specific awareness to prevent antimicrobial misuse. The Abonnema community's openness to education initiatives (91.3%) further suggests the effectiveness of these strategies when targeted appropriately, echoing the recommendations in both studies for a sustained, inclusive approach to antimicrobial stewardship.

CONCLUSION

Many factors were identified for abusing anti-microbial agents in Abonnema community. The factors identified from the residents' perspectives were socio-economic, lack of accessibility to health care facilities, acute shortage of professional health care providers, ignorance, etc. On the strategies that could be adopted to mitigate these problems are the provision of adequate health care facilities and health education in schools, worship centers, radio, television, town square etc.

RECOMMENDATIONS

1. Public enlightenment regarding the importance and dangers associated with antimicrobial use.
2. Effective laboratory investigation before administration of antimicrobials.

Similar studies should be conducted in other localities, using this as template.

REFERENCES

1. Ovung A, Bhattacharyya J. Sulfonamide drugs: structure, antibacterial property, toxicity, and biophysical interactions. Biophysical reviews. 2021 Apr;13(2):259-72. https://doi.org/10.1007/s12551-021-00795-9
2. Fohner AE, Sparreboom A, Altman RB, Klein TE. PharmGKB summary: Macrolide antibiotic pathway, pharmacokinetics/pharmacodynamics. Pharmacogenetics and genomics. 2017 Apr 1;27(4):164-7. https://doi.org/10.1097/FPC.0000000000000270
3. Auta A, Hadi MA, Oga E, Adewuyi EO, Abdu-Aguye SN, Adeloye D, Strickland-Hodge B, Morgan DJ. Global access to antibiotics without prescription in community pharmacies: a systematic review and meta-analysis. Journal of Infection. 2019 Jan 1;78(1):8-18. https://doi.org/10.1016/j.jinf.2018.07.001
4. Awosan KJ, Ibitoye PK, Abubakar AK. Knowledge, risk perception and practices related to antibiotic resistance among patent medicine vendors in Sokoto metropolis, Nigeria. Nigerian journal of clinical practice. 2018;21(11):1476-83.
5. Awosan.K.I, Ibitoye.P.K., & Abubakar.A.K., (2019) "Knowledge, risk perception and practices related to antibiotic resistance among patent medicine vendors in Sokoto metropolis, Nigeria". Journal / Nigerian Journal of Clinical Practice / Vol. 21 No. 11 (2018) / Articles
6. Barlam TF, Cosgrove SE, Abbo LM, MacDougall C, Schuetz AN, Septimus EJ, Srinivasan A, Dellit TH,

Falck-Ytter YT, Fishman NO, Hamilton CW. Implementing an antibiotic stewardship program: guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America. Clinical infectious diseases. 2016 May 15;62(10):e51-77. https://doi.org/10.1093/cid/ciw118

7. Bassetti M, Merelli M, Temperoni C, Astilean A. New antibiotics for bad bugs: where are we?. Annals of clinical microbiology and antimicrobials. 2013 Aug 28;12(1):22. https://doi.org/10.1186/1476-0711-12-22
8. Bishop C, Yacoob Z, Knobloch MJ, Safdar N. Community pharmacy interventions to improve antibiotic stewardship and implications for pharmacy education: a narrative overview. Research in Social and Administrative Pharmacy. 2019 Jun 1;15(6):627-31. https://doi.org/10.1016/j.sapharm.2018.09.017
9. De Waele JJ, Akova M, Antonelli M, Canton R, Carlet J, De Backer D, Dimopoulos G, Garnacho-Montero J, Kesecioglu J, Lipman J, Mer M. Antimicrobial resistance and antibiotic stewardship programs in the ICU: insistence and persistence in the fight against resistance. A position statement from ESICM/ESCMID/WAAAR round table on multi-drug resistance. Intensive care medicine. 2018 Feb;44(2):189-96.
10. Roger C, Roberts JA, Muller L. Clinical pharmacokinetics and pharmacodynamics of oxazolidinones. Clinical pharmacokinetics. 2018 May;57(5):559-75. https://doi.org/10.1007/s40262-017-0601-x
11. Dadgostar P. Antimicrobial resistance: implications and costs. Infection and drug resistance. 2019 Dec 20:3903-10. https://doi.org/10.2147/IDR.S234610
12. Darwish RM, Baqain GN, Aladwan H, Salamah LM, Madi R, Masri RM. Knowledge, attitudes, and practices regarding antibiotic use and resistance among community pharmacists: a cross sectional study in Jordan. International journal of clinical pharmacy. 2021 Oct;43(5):1198-207. https://doi.org/10.1007/s11096-021-01234-1
13. Davey P, Brown E, Charani E, Fenelon L, Gould IM, Holmes A, Ramsay CR, Wiffen PJ, Wilcox M. Interventions to improve antibiotic prescribing practices for hospital inpatients. Cochrane database of systematic reviews. 2013(4). https://doi.org/10.1002/14651858.CD003543.pub3
14. Chinemerem Nwobodo D, Ugwu MC, Oliseloke Anie C, Al-Ouqaili MT, Chinedu Ikem J, Victor Chigozie U, Saki M. Antibiotic resistance: The challenges and some emerging strategies for tackling a global menace. Journal of clinical laboratory analysis. 2022 Sep;36(9):e24655. https://doi.org/10.1002/jcla.24655
15. De Clercq, E. (2016). The discovery of antiviral agents: past, present, and future. Journal of Medicinal Chemistry, 60(8), 3242-3278.
16. Dyar OJ, Huttner B, Schouten J, Pulcini C. What is antimicrobial stewardship?. Clinical microbiology and infection. 2017 Nov 1;23(11):793-8. https://doi.org/10.1016/j.cmi.2017.08.026
17. Peterson E, Kaur P. Antibiotic resistance mechanisms in bacteria: relationships between resistance determinants of antibiotic producers, environmental bacteria, and clinical pathogens. Frontiers in microbiology. 2018 Nov 30;9:2928. https://doi.org/10.3389/fmicb.2018.02928
18. Baquero F, Levin BR. Proximate and ultimate causes of the bactericidal action of antibiotics. Nature Reviews Microbiology. 2021 Feb;19(2):123-32. https://doi.org/10.1038/s41579-020-00443-1
19. Fleming-Dutra, K. E., Hersh, A. L., & Shapiro, D. J., (2016). Prevalence of Inappropriate Antibiotic Prescriptions Among US Ambulatory Care Visits, 2010-2011. JAMA, 315(17), 1864-1873.
20. Kapoor G, Saigal S, Elongavan A. Action and resistance mechanisms of antibiotics: A guide for clinicians. Journal of Anaesthesiology Clinical Pharmacology. 2017 Jul 1;33(3):300-5. https://doi.org/10.4103/joacp.JOACP_349_15
21. Hajarizadeh B, Grebely J, Dore GJ. Epidemiology and natural history of HCV infection. Nature reviews Gastroenterology & hepatology. 2013 Sep;10(9):553-62. https://doi.org/10.1038/nrgastro.2013.107

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