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RESEARCH ARTICLE

A Qualitative Study on Community Usage of Antibiotics in Mogadishu-Somalia

Shafii Abdullahi Maalim Mohamed[1,2*] and Ahmed Muhammad Bashir[3]

[1]Indian Management School and Research Centre, Mumbai, India; [2]Center for Postgraduate Studies, Horseed International University, Mogadishu, Somalia; [3]Department of Internal Medicine, Mogadishu Somalia Turkiye Training and Research Hospital, Mogadishu, Somalia

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Abstract:

***Aim*:** This study examines the knowledge and usage of antibiotics among participants in Somalia. Obtaining antibiotics from pharmacies based on perceived indications is common, driven by self-medication or advice from non-medical sources due to financial constraints.

***Methods*:** The study used qualitative research design and data were gathered primarily through in-depth semi-structured interviews, employing a carefully designed interview guide. Participants were intentionally selected to encompass diverse medical and educational backgrounds, ensuring a comprehensive representation of the community. A total of 20 participants were interviewed, providing a sufficiently robust dataset for analysis.

***Results*:** The study reveals that participants have a basic understanding of antibiotics and use them primarily for treating infections, naming specific examples. Dosage guidance varies, with participants relying on pharmacy salespersons, package leaflets, past prescriptions, or medical advice. Non-compliance with prescribed antibiotic courses is also prevalent. Concerns about the quality of antibiotics in the market are expressed, with participants favouring medicines imported from local markets of exporting countries.

***Conclusion*:** The findings underscore the need for education and awareness campaigns to address knowledge gaps and promote responsible antibiotic use. Improving healthcare access, implementing regulatory measures, enhancing pharmaceutical quality, and properly training pharmacy personnel are necessary to ensure safe antibiotic use and combat antibiotic resistance.

Keywords: Self-medication, antibiotic resistance, Antibiotic use, Somalia.

1. INTRODUCTION

Antimicrobial resistance is a major global health challenge responsible for over 700,000 deaths worldwide [1]. Without effective intervention, it is predicted that by 2050, the cost in terms of lives lost will reach 10 million, with a financial impact of approximately US$100 trillion [1]. To address this issue, antimicrobial resistance has been included as a sustainable development goal and is a key focus of numerous global initiatives led by the World Health Organization (WHO) [2,3]. These initiatives aim to enhance surveillance of antimicrobial resistance through platforms such as the WHO tripartite database WHONET [4], the Advisory Group on Integrated Surveillance of Antimicrobial Resistance (AGISAR), and the Global Antimicrobial Resistance Surveillance System (GLASS) [5].

Improper utilization of antimicrobials, encompassing actions like self-administration, suboptimal dosing, and excessive antibiotic usage, is

*Correspondence should be addressed to Shafii Abdullahi Maalim Mohamed, Indian Management School and Research Centre, Mumbai, India and Center for Postgraduate Studies, Horseed International University, Mogadishu, Somalia;
E-mail: alshafi45@gmail.com

widely acknowledged as a prominent catalyst behind the emergence and dissemination of antimicrobial resistance [6-7]. It is important to note that antibiotic resistance is a subset of antimicrobial resistance, and one of its major contributors is the inappropriate utilization of antimicrobial agents, commonly referred to as antibiotics. The inappropriate use of antibiotics is influenced by a combination of supply and demand factors. On the supply side, issues such as the absence of robust antibiotic regulations, the excessive prescription of antibiotics, and unregulated or unequal access to antimicrobials have been identified as significant factors driving this problem [8-9]. Meanwhile, on the demand side, factors are closely linked to consumers' lack of awareness regarding appropriate antibiotic use and its consequences. Additionally, beliefs, expectations, and personal antibiotic experiences are pivotal in this context [11-12].

The situation in African countries regarding Antimicrobial Resistance (AMR) is extremely dire and difficult to accurately describe due to many countries' lack of regular national surveillance reports on AMR [13]. The high prevalence of infectious diseases in Sub-Saharan Africa (SSA) and the poor hygiene conditions, along with the increasing number of immunocompromised patients, are exacerbating the problem of AMR in the region [13].

Notably, a substantial portion of global antibiotic consumption between 2000 and 2015 occurred in low- and middle-income countries (LMICs), particularly in SSA, primarily due to their high prevalence of infectious diseases. Furthermore, it has been projected that a significant proportion of AMR-related deaths will occur in SSA, primarily due to the region's limited financial resources within the healthcare system [14].

Numerous factors contribute to the development of AMR [15], with the overuse and misuse of antibiotics being the most pervasive and preventable drivers of AMR acceleration [16,17]. Despite efforts to curb antibiotic misuse, an alarming statistic reveals that approximately 50% of antibiotics are prescribed without a prescription on a global scale [18]. In the African context, a recent meta-analysis highlighted that non-prescription dispensing of antibiotics was notably prevalent, accounting for 69% of cases in Sub-Saharan Africa, and this practice was more frequently observed in cases of upper respiratory tract infections and diarrhoea [14].

Somalia faces significant challenges in its healthcare system, including lacking a functional national medicine regulatory authority and a lack of regulation in the private pharmaceutical sector. These issues have contributed to the circulation of substandard imported medicines and the emergence of antimicrobial resistance (AMR) within the country. Moreover, the misuse and overuse of antimicrobial drugs are key factors driving the development of drug-resistant pathogens [18].

Anecdotal evidence suggests that healthcare professionals in Somalia often prescribe antibiotics excessively, sometimes offering them without prescriptions and without providing proper guidance. These practices have fuelled the proliferation of AMR, leading to microbes, including bacteria, parasites, viruses, and fungi, becoming resistant to antimicrobial treatments. Consequently, the efficacy of prescription medicines in combating infections is diminishing, raising the risk of disease transmission, severe illnesses, and even fatalities [18]. In response to these pressing concerns, Somalia took a significant step in 2020 by formulating a national action plan to combat AMR, in collaboration with the World Health Organization (WHO). Although the plan awaits formal endorsement by the Federal Government, it outlines four essential pillars raising Awareness, surveillance and monitoring, Infection Prevention and Control (IPC) And promoting Proper Use of Antimicrobials aimed in addressing AMR effectively [18].

2. METHODOLOGY

2.1. Study Duration

This qualitative research was conducted over the course of one month, from February 1st, 2023, to March 1st, 2023.

2.2. Data Collection Methods

Data were gathered primarily through in-depth semi-structured interviews, employing a carefully designed interview guide.

2.3. Sampling Techniques

The research used purposive and snowball sampling to identify and recruit participants. The target demographic consisted of adult heads of households residing in Mogadishu, Somalia.

2.4. Participant Selection Criteria

Participants were intentionally selected to encompass diverse medical and educational backgrounds, ensuring a comprehensive representation of the community.

2.5. Sample Size

A total of 20 participants were interviewed, providing a sufficiently robust dataset for analysis.

3. RESULTS

3.1. Demographic Profile

The study's participant group had a median age of 37.

Most participants were male, constituting 60% of the sample, and a significant proportion had attained at least a secondary level of education, totalling 75 % of the participants (Table **1**).

4. DISCUSSION

4.1. Theme 1: Knowledge, Indications, and Use of Antibiotics

All participants were familiar with the term "antibiotics," with the majority characterizing antibiotics as pharmaceutical substances employed in the treatment of infections. The participants provided examples of various antibiotics, such as amoxicillin, ampicillin, ceftriaxone, Augmentin, ciprofloxacin, metronidazole, and albendazole. It was observed that all participants obtained antibiotics from a pharmacy by requesting specific medications based on their indications. For instance, if a participant experienced diarrhoea, they would ask for a tablet specifically for that condition, such as metronidazole, which was already associated with treating diarrhoea in the consumer's mind. Additionally, all participants reported personally using or administering antibiotics to a household member.

Female participants indicated that they acquire antibiotics from a pharmacy whenever they experience symptoms of vaginitis, such as itching, Odor, or abnormal discharge, in order to alleviate these discomforts. The majority of participants have reported that they personally or on behalf of their household members administer ceftriaxone or Augmentin when experiencing symptoms of coughing and other respiratory illnesses. Similarly, when children or adults in a household are afflicted with ringworm, albendazole may be employed as a treatment option. Male participants reported a consistent preference for ciprofloxacin as the primary antibiotic when encountering symptoms of dysuria.

Table 1. Sample characteristics.

Variable	N (20)	(%)
Age		
• Median (Min-Max)	37	28-50
Gender		
• Male	12	60
• Female	8	40
Education level		
• Primary	5	25
• Secondary	10	50
• University	5	25
Profession		
• Unemployed	8	40
• Employed	12	60
Household size		
• Median (Min-Max)	7	5-10

4.2. Theme 2: Prescription, Purchase, and Use of Antibiotics

Several sources advising antibiotic use were identified Based on participant responses. These included self-medication or advice from non-medical family members or pharmacy salespersons. Self-medication was found to be very common, with participants relying on their medical experience, often based on previous antibiotic prescriptions. The lack of financial means was the most reported reason for not visiting a health facility when sick. Participants mentioned that they resorted to self-medication, relatives, or healthcare providers outside of the formal healthcare setting due to the high cost of hospital visits. Pharmacy personnel were often the source of medication information, as they were more accessible and affordable.

4.3. Theme 3: Dosage and Duration of Treatment

60% of the self-medicated participants relied on information from pharmacy salespersons and the instructions provided on the medication's package leaflet to determine the appropriate dosage and treatment duration. Meanwhile, another group of participants referred to their past medical prescriptions for guidance. For determining the proper dosage and length of their treatment, the remaining participants opted to rely on the recommendations made by medical prescribers. However, many participants reported non-compliance with antibiotic treatment, opting to discontinue it after experiencing partial relief.

4.4. Theme 4: Quality perceptions of antibiotics available in the market

Every participant voiced significant apprehension regarding the quality of pharmaceuticals readily available in the Somali market. Among these participants, some individuals had direct experience purchasing antibiotics that, in their estimation, proved to be less effective owing to a noticeable reduction in the concentration of the active pharmaceutical ingredient. Moreover, a prominent perception shared among the participants revolved around the origin of medicines imported into Somalia, particularly those from countries like China and India. Many participants believed that these medications were predominantly manufactured for export purposes and, consequently, might not uphold the stringent quality standards desired by consumers in Somalia.

Conversely, participants preferred medicines sourced from the local markets of exporting countries, such as those imported from Turkish markets. They held the belief that these products were better tailored to exporting countries residents' needs and met the expected quality standards, thus instilling greater confidence in their efficacy and safety.

4.5. Theme 5: Antibiotic Risks

Among the participants, a notable observation was the prevalent lack of comprehensive knowledge concerning the potential risks associated with antibiotic use. In fact, a considerable portion of the group appeared to be entirely unaware of the dangers linked to antibiotics. On the other hand, some participants acknowledged that antibiotics could pose risks, but their understanding of these risks remained vague and ill-defined. They struggled to articulate or provide specific details about the potential adverse consequences.

Notably, out of the entire pool of participants, a mere three individuals out of the twenty interviewed demonstrated any familiarity with the term "antibacterial resistance. This term is critical to understanding the broader consequences of antibiotic misuse. Interestingly, participants seemed to possess a greater awareness of antibiotics' advantages and positive aspects than a balanced understanding of their potential risks. This disparity in knowledge underscores the need for increased education and awareness campaigns regarding the responsible use of antibiotics and the associated risks, particularly in the context of public health.

5. DISCUSSION

The participants in our study exhibited a fundamental level of familiarity with antibiotics, primarily recognizing them as pharmaceutical substances utilized for treating infections. Notably, they displayed the ability to name specific antibiotics, indicating a certain level of awareness. The prevalent practice of acquiring antibiotics from pharmacies based on perceived indications reflects self-medication trends within the community. The specific instances provided, such as using metronidazole for diarrhoea or ciprofloxacin for dysuria, shed light on the participants' reliance on antibiotics for addressing distinct symptoms. Furthermore, our findings reveal that female participants frequently seek antibiotics to alleviate symptoms of vaginitis, while household members commonly employ ceftriaxone or Augmentin for respiratory issues. This observation enriches our comprehension of antibiotic usage patterns within the community and has implications for informing healthcare providers and policymakers about prevalent self-medication practices and associated risks. In a similar study conducted in Kinshasa, Democratic Republic of Congo (DRC), it was found that while most participants were familiar with the term "antibiotic," their knowledge about the indications and risks associated with the use of antibiotics was limited. This suggests a need for educational interventions and awareness campaigns to improve antibiotic literacy and promote responsible antibiotic use in the community [19]. Additionally, our study highlights the diverse sources of advice on antibiotic use, including self-

medication, guidance from non-medical friends and family members, and information obtained from pharmacy salespersons. The high prevalence of self-medication is a cause for concern, signalling a lack of professional medical oversight. Financial constraints, leading to the avoidance of healthcare facilities, contribute significantly to this self-medication trend, underscoring the urgent need for improved healthcare accessibility and affordability.

In Somalia, the local pharmaceutical and laboratory sectors have experienced a significant expansion due to their affordability compared to licensed and certified health centres and pharmacies [20]. Furthermore, the prominent role of pharmacy personnel as primary sources of information regarding medications underscores the importance of adequately training and regulating these professionals to ensure the safe use of antibiotics. This theme emphasizes the necessity of addressing financial barriers to healthcare access to reduce self-medication practices. Moreover, our research reveals that self-medicated participants rely on pharmacy salespersons and package leaflet instructions to determine appropriate dosage and treatment duration. This finding underscores the need for providing clearer and more accessible information on antibiotic use. A research investigation conducted in Tanzania revealed that there is a substantial prevalence of non-prescription sales and dispensing of antibiotics [21]. Additionally, the widespread issue of non-compliance with prescribed antibiotic treatments is a cause for alarm, as it implies the potential for inadequate treatment outcomes and the development of antibiotic resistance. In addition, our study emphasizes the importance of healthcare providers prioritizing patient education on proper antibiotic usage, with a specific emphasis on completing prescribed courses. This theme underscores the need for targeted educational interventions in healthcare settings. Furthermore, participants in our research express substantial concerns about the quality of antibiotics available in the Somali market. Their apprehensions regarding the quality of imported medications, particularly from countries like China and India, reflect a lack of trust in the pharmaceutical supply chain. Conversely, their preference for medicines imported from local Turkish markets underscores the significance of trust and familiarity in making medication choices. A study conducted by UNICEF in 2012 revealed that most pharmacies in Somalia did not check the quality of the pharmaceutical products they procured. Quality assurance checks were minimal, with pharmacy workers limited to confirming correct brand names and overall positive impressions. This lack of regulation has detrimental consequences, as over-the-counter medications obtained from these pharmacies can be ineffective or even dangerous. Somalia has also become a dumping ground for expired and falsified medications, further exacerbating the problem [20]. Efforts to enhance the quality of pharmaceuticals in the local market and build consumer trust are imperative in addressing these concerns. Regulatory measures and quality assurance initiatives play a pivotal role in achieving this goal. Additionally, our research highlights the limited awareness among participants about the potential risks associated with antibiotics, including antibiotic resistance. The practice of dispensing antibiotics without a prescription is a serious concern for public health as it contributes to the overconsumption of antibiotics, which in turn fosters the emergence of antimicrobial resistance. The unrestricted availability of antibiotics within communities has been well-documented as a significant contributing factor to the development of antimicrobial resistance [21].

The fact that only a small fraction of participants was familiar with the term "antibacterial resistance" underscores the urgent need for public health campaigns aimed at raising awareness about the consequences of antibiotic misuse. The participants' greater awareness of the benefits of antibiotics compared to their understanding of the risks highlights a critical gap in knowledge. Finally, the discussion of these findings highlights the need for multifaceted interventions to address antibiotic usage patterns, including increased education, regulatory measures, improved healthcare access, and efforts to enhance the quality of pharmaceuticals. These measures are essential for promoting responsible antibiotic use and mitigating the risks associated with misuse.

CONCLUSION

In conclusion, this study reveals key insights into antibiotic knowledge and usage among Somali participants. They showed a basic understanding of antibiotics, using them primarily for infections and naming specific examples. Obtaining antibiotics from pharmacies based on indications is common, driven by self-medication or advice from

non-medical sources due to financial constraints. Dosage guidance varies, with reliance on pharmacy salespersons, package leaflets, past prescriptions, or medical advice. Non-compliance with antibiotic courses is prevalent. Concerns about antibiotic quality exist, favouring exporting countries local market intended products. Importantly, participants have limited awareness of antibiotic risks, including resistance. This underscores the need for education and awareness campaigns.

Addressing antibiotic knowledge gaps, promoting responsible use, and improving healthcare access is crucial. Regulatory measures, pharmaceutical quality enhancement, and proper pharmacy personnel training are essential. Multifaceted interventions are necessary to ensure safe antibiotic use and combat antibiotic resistance.

AUTHORS' CONTRIBUTIONS

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

ETHICAL APPROVAL

The Ethical review board of Horseed International University has reviewed and approved this study

CONSENT FOR PUBLICATION

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CONFLICT OF INTEREST

The author confirms that this article's content has no conflict of interest.

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