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AWARENESS OF ANTIMICROBIAL RESISTANCE IN SRI LANKA

Introduction

Antimicrobial resistance has become one of the most urgent public health challenges of the 21st century, affecting countries regardless of income, geography, or healthcare capacity. As bacteria, viruses, and other microorganisms evolve to resist the medicines designed to treat them, common infections become harder to cure, leading to longer illnesses, higher medical costs, and increased mortality. Sri Lanka, like many nations in South Asia, faces growing pressure from rising antibiotic use, limited regulation, and gaps in public awareness, making AMR a critical issue that demands immediate attention [1].

In Sri Lanka, antibiotics are widely used in both formal healthcare settings and informal community practices, which increases the risk of misuse and overuse. Studies have shown that many individuals obtain antibiotics without prescriptions, discontinue treatment early, or use leftover medications from previous illnesses. These behaviors accelerate the development of resistant microorganisms and weaken the effectiveness of essential drugs. Understanding how the public perceives antibiotics and AMR is therefore essential for designing effective national strategies and public health interventions [2].

Raising awareness and improving knowledge about antimicrobial resistance are key components of global and national efforts to control its spread. Public understanding influences how people use antibiotics, follow medical advice, and engage with healthcare systems. By examining awareness levels among Sri Lankans, this study aims to identify knowledge gaps, behavioral risks, and areas where education and policy improvements are most needed. Strengthening awareness is not only a health priority but also an important step toward safeguarding the effectiveness of antibiotics for future generations [3].

Goal

The aim of this study is to assess how well the Sri Lankan population understands antimicrobial resistance and how their knowledge influences antibioticrelated behaviors. The study also seeks to identify gaps in public awareness and highlight areas where national strategies, education, and surveillance efforts can be strengthened to reduce the growing threat of antimicrobial resistance.

Material and methods of research

A crosssectional survey was carried out among Sri Lankan residents to evaluate their awareness and attitudes toward antimicrobial resistance. Data were collected using an online questionnaire created through Google Forms. A total of 216 responses were received. The questionnaire included items on antibiotic use, knowledge of antimicrobial resistance, and behaviors that may contribute to resistance [4].

The results of the research and their discussion

Research findings show that most respondents were young adults aged 18–25, making up 96 participants (44.4%). The next largest groups were those aged 36–45 with 43 participants (19.9%) and 26–35 with 32 participants (14.8%). A further 28 respondents (13.0%) were between 46–60 years old. Only a small number were under 18, with 13 participants (6.0%), and just

4 respondents (1.9%) were above 60. According to figure 1 most respondents obtained antibiotics through a doctor's prescription (50.7%), but a significant portion still accessed them without proper medical oversight. Nearly onequarter of participants purchased antibiotics directly from pharmacies without a prescription (24.9%), while others relied on leftover medication from previous illnesses (12.9%) or recommendations from friends or relatives (11.5%). These findings highlight the continued presence of informal and unregulated pathways for obtaining antibiotics, which increases the risk of misuse and contributes to the growing problem of antimicrobial resistance (Figure 1).

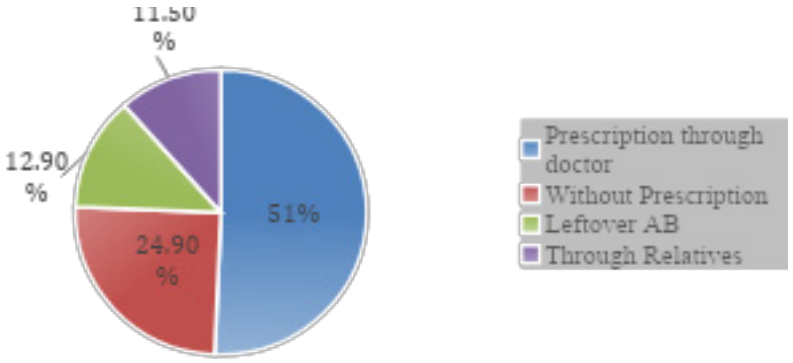

Figure 1 – Methods of obtaining antibiotics

According to figure 2, adherence to prescribed antibiotic courses was inconsistent among respondents. Only 27.2% reported always completing the full course of antibiotics, while almost half completed it only sometimes (46.1%). A notable proportion rarely finished their treatment (18.9%), and a small group never completed it at all (7.8%). This pattern of incomplete adherence is a major behavioral factor that accelerates antimicrobial resistance, underscoring the need for stronger public education on the importance of finishing prescribed antibiotic treatments (Figure 2).

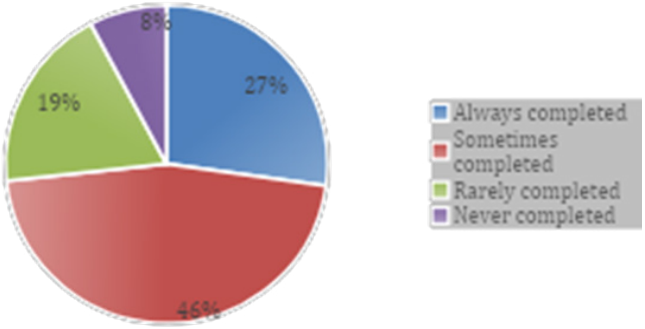

Figure 2 – Duration of completing antibiotics course

Conclusions

The study shows that antimicrobial resistance is becoming a growing concern in Sri Lanka, shaped largely by the behaviors and understanding of younger adults, who made up the majority of respondents. Although many participants recognized that antibiotics are meant to treat bacterial infections, misconceptions were still common, with a notable portion believing they could be used for viral illnesses. Awareness of AMR was relatively high, yet only a small group felt confident in their knowledge, revealing a clear gap between hearing about the issue and truly understanding it. This limited depth of knowledge affects how people use antibiotics in daily life.

Patterns of antibiotic use further highlight the challenges Sri Lanka faces. A large majority had taken antibiotics within the past year, but many obtained them without prescriptions or used

leftover medication, showing how easily antibiotics can be accessed outside proper medical channels. Treatment adherence was also inconsistent: only about onequarter of respondents completed their full antibiotic course, while most stopped early or took them irregularly. These behaviors selfmedication, misuse, and incomplete treatment create ideal conditions for resistant bacteria to develop and spread. Overall, the findings make it clear that Sri Lanka is at a critical point in its fight against antimicrobial resistance. Awareness alone is not enough; people need accurate knowledge, responsible access to antibiotics, and stronger guidance on how to use them correctly. Improving public education, regulating antibiotic sales more effectively, and promoting responsible healthseeking behavior are essential steps to protect the effectiveness of antibiotics for future generations. Without these efforts, AMR will continue to rise, threatening the country's health system and the wellbeing of its communities.

LITERATURE

1. Antibiotic resistance – the need for global solutions / R. Laxminarayan, A. Duse, C. Wattal [et al.] // The Lancet Infectious Diseases. – 2013. – Vol. 13, No. 12. – P. 1057–1098. – URL: https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(13)70318-9/fulltext (дата обращения: 15.03.2026).

2. Food and Agriculture Organization, World Organisation for Animal Health, World Health Organization. Antimicrobial resistance: a manual for developing national action plans. – Rome : FAO, 2016. – 132 p. – URL: https://www.fao.org/3/a-i6039e.pdf (дата обращения: 15.03.2026).

3. Padeniya, A. Knowledge, attitudes and practices related to antibiotic use among the public in Sri Lanka / A. Padeniya, P. Chandrakanthi // Journal of the College of Community Physicians of Sri Lanka. – 2018. – Vol. 24, No. 2. – P. 12–18. – URL: https://jccpsl.sljol.info/articles/10.4038/jccpsl.v24i2.8198 (дата обращения: 15.03.2026).

4. Google Forms : [сайт]. – URL: https://docs.google.com/forms/d/e/1FAIpQLScHAVpOyo7aezVrWs-aR1_xQbp8KDPsRECaR2G1bb-TOkwqeQ/viewform (дата обращения: 15.03.2026).

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AI SYSTEM FOR ANTIMICROBIAL RESISTANCE ANALYSIS

Introduction

Antimicrobial resistance poses a serious threat to patients in the world and the Gomel region too. Rapid identification of resistant pathogens is crucial for effective treatment and antimicrobial stewardship. This study analyzes resistance patterns among clinical isolates obtained from the Gomel Regional Center for Hygiene, Epidemiology, and Public Health to guide empirical antibiotic selection and local stewardship efforts [1, 2].

Traditional culture-based susceptibility testing can take 24–72 hours, delaying optimal therapy [3]. Whole-genome sequencing (WGS) combined with machine learning (ML) offers a faster alternative by predicting resistance from genomic markers [4]. However, implementing ML models typically requires programming skills and computational infrastructure, limiting their adoption in clinical and educational settings.

Recent efforts have produced accessible tutorials that guide beginners through ML-based AMR prediction. Notably, a tutorial published in PLOS Computational Biology (2024) provides step-by-step instructions and Google Colab notebooks for building and evaluating ML models on a real Escherichia coli dataset [5]. The dataset comprises 1,936 isolates with gene presence-absence profiles and susceptibility results for 12 antibiotics, making it an ideal resource for hands-on learning.