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Research Article

Antibiotic Non-Adherence and Associated Factors Among Household Members in Kolfe Keraniyo and Nifas Silk Lafto Subcities, Addis Ababa, Ethiopia: A Community-Based Cross-Sectional Study, Addis Ababa, Ethiopia, 2025

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Abstract

Background: Antimicrobial resistance, fueled in part by antibiotic non-adherence, is a critical global public health threat. Understanding the scale and drivers of non-adherence at the community level is essential for crafting effective interventions, particularly in low-and middle-income countries like Ethiopia.

Objective: This study aimed to assess the prevalence of antibiotic non-adherence and identify its associated factors among household members in Kolfe Keraniyo and Nifas Silk Lafto subcities of Addis Ababa, Ethiopia.

Methods: A community-based cross-sectional study was conducted from July to August 2025. A total of 507 households were selected using a multi-stage sampling technique. Data were collected through face-to-face interviews using a structured questionnaire that included the 8-item Morisky Medication Adherence Scale (MMAS-8). Bivariate and multivariable logistic regression analyses were employed to identify factors associated with antibiotic non-adherence.

Results: The prevalence of antibiotic non-adherence was 79.5% (95% CI: 75.7-82.9). The most common reason for non-adherence was forgetting to take the medication (39.6%). In the multivariable analysis, lower educational status (AOR=0.003, 95% CI: 0.00-0.023 for college and above vs. illiterate), poor knowledge about antibiotics (AOR=2.43, 95% CI: 1.12-5.30), poor attitude towards antibiotic use (AOR=2.38, 95% CI: 1.20-4.72), experiencing medication discomfort (AOR=2.50, 95% CI: 1.27-4.92), and not receiving prescription information from a drug dispenser (AOR=2.59, 95% CI: 1.29-5.23) were statistically significant factors associated with antibiotic non-adherence.

Conclusion and Recommendations: The study revealed an alarmingly high prevalence of antibiotic non-adherence in the community. Public health interventions should prioritize patient education, improve healthcare provider-patient communication, and strengthen antibiotic stewardship programs, with a special focus on individuals with lower educational attainment.

Keywords: Antibiotics, Non-adherence, Prevalence, Associated Factors, Households, Addis Ababa, Ethiopia.

Introduction

Antibiotics are a cornerstone of modern medicine, vital for treating bacterial infections [1]. However, their efficacy is critically dependent on patient adherence taking the medication exactly as prescribed by a healthcare provider [2]. Non-adherence, which includes behaviors such as missing doses, stopping the course early upon feeling better, or sharing medications, is a pervasive problem [3]. This misuse has severe consequences, including treatment failure, increased healthcare costs, and the accelerated development of antimicrobial resistance (AMR) [4].

AMR is recognized by the World Health Organization as one of the top ten global public health threats [5]. In 2019, bacterial AMR was directly responsible for 1.3 million deaths worldwide [6]. The situation is particularly concerning in Ethiopia, where studies report high rates of multidrug-resistant bacteria [7]. A significant driver of this crisis is the inappropriate use of antibiotics at the community level.

While studies on antibiotic use have been conducted in other parts of Ethiopia [8, 9], there is a scarcity of data from the capital, Addis Ababa. This study therefore aimed to determine the prevalence and identify the factors associated with antibiotic non-adherence among household members in two selected subcities of Addis Ababa. The findings are intended to inform targeted public health strategies and policies to combat AMR.

Methods

Study Design, Area, and Period

A community-based cross-sectional study was conducted in Kolfe Keraniyo and Nifas Silk Lafto subcities of Addis Ababa between July and August 2025.These two subcities were randomly selected from the city's 11 subcities.

Study Population and Sampling

The study included adult household members(≥18 years) who had received a prescription for oral antibiotics in the four months preceding the survey and had resided in the study area for at least four months. Chronically ill patients were excluded.

A single population proportion formula was used,with a prevalence of 67.9% from a previous study [9], a 95% confidence level, a 4% margin of error, and a 10% non-response rate, yielding a final sample size of 523 households. A multi-stage sampling technique was employed to select participants from randomly chosen woredas (districts) and ketenas (neighborhoods).

Data Collection Tool and Procedure

Data were collected through face-to-face interviews using a structured questionnaire adapted from existing literature[8, 10]. The tool comprised five parts: socio-demographics, knowledge about antibiotics, attitude towards antibiotic use, antibiotic adherence measured by the 8-item Morisky Medication Adherence Scale (MMAS-8) [10], and patient-related clinical factors. The MMAS-8 score was dichotomized, with a score of <6 indicating non-adherence and a score of ≥6 indicating adherence. Knowledge and attitude were classified as "good" or "poor" based on whether the participant's score was above or below the mean, respectively.

Data Quality Assurance

The questionnaire was pretested on 5%of the sample in non-selected areas. Data collectors and supervisors were trained, and the principal investigator performed daily checks for completeness and consistency.

Data Processing and Analysis

Data were entered into Epi Data and exported to SPSS version 27 for analysis.Descriptive statistics were presented using frequencies, percentages, and graphs. Bivariate logistic regression was used to identify candidate variables ($p < 0.2$) for the multivariable model. Multivariable logistic regression was then performed to control for confounders, and Adjusted Odds Ratios (AOR) with 95% Confidence Intervals (CI) were reported. Statistical significance was declared at $p < 0.05$.

Ethical Consideration

Ethical clearance was obtained from the Santé Medical College Institutional Research Ethics Review Committee(IRERC). Permission was secured from relevant city and subcity health bureaus. Oral informed consent was obtained from all participants after explaining the study's purpose, benefits, risks, and their right to withdraw.

Results

Socio-Demographic Characteristics

Out of 523 sampled households,507 participated, yielding a response rate of 97%. The majority of respondents were female (69.2%). The mean age of participants was 39 years (±13.15 SD), and over half (58.2%) were 39 years or younger. A significant proportion (80.7%) had a family size of five or fewer. Regarding education, 15.6% were illiterate, and only 14.6% had a college education or higher (Table 1).

Variables	Frequency (Percentage)
Sex	
Male	156 (30.8%)
Female	351 (69.2%)
Age (Mean)	
Less than or equal to 39 years	295 (58.2%)
Greater than 39 years	212 (41.8%)
Family size (Mean)	

Less than or equal to 5	409 (80.7%)
Greater than 5	98 (19.3%)
Education status	
Illiterate	79 (15.6%)
Read And Write	112 (22.1%)
Primary(1-8)	142 (28.0%)
Secondary(9-12)	100 (19.7%)
College And Above	74 (14.6%)
Marital status	
Single	120 (23.7%)
Married	340 (67.1%)
Divorced	26 (5.1%)
Widowed	21 (4.1%)
Occupation	
Student	39 (7.7%)
Private	113 (22.3%)
Government	93 (18.3%)
Merchant	85 (16.8%)
Housewife	158 (31.2%)
Other*	19 (3.7 %)

Table 1: Socio-demographic characteristics of study participants in Kolfe Keraniyo and Nifas Silk Lafto, Addis Ababa, 2025 (n=507).

Knowledge and Attitude about Antibiotics

Only 36.5%of participants had good knowledge about antibiotics. For instance, while 78.5% knew antibiotics kill bacteria, 55.4% incorrectly believed they could kill viruses. Similarly, 40.2% of participants had a good attitude towards antibiotic use. A majority (59.2%) disagreed with stopping antibiotics when feeling better, and 62.5% disagreed with buying antibiotics without a prescription.

Prevalence of Antibiotic Non-Adherence

The study found that 403 out of 507 participants were non-adherent to their prescribed antibiotic regimen,yielding a prevalence of 79.5% (95% CI: 75.7-82.9).

Reasons for Antibiotic Non-Adherence

The primary reasons cited for non-adherence were:forgetting to take the medication (39.6%), feeling better and stopping early (26.6%), and cost difficulties (19.1%).

Factors Associated with Antibiotic Non-Adherence

In the bivariate analysis,variables such as educational status, knowledge, attitude, medication discomfort, and lack of prescription information had a p-value <0.2 and were included in the multivariable model.

The final multivariable logistic regression model identified five key factors significantly associated with antibiotic non-adherence (Table 2):

· Educational Status: Higher education was a strong protective factor. Participants with a college education or higher had a 99.7% lower odds of non-adherence compared to illiterate participants (AOR=0.003, 95% CI: 0.00-0.023).

Poor Knowledge: Participants with poor knowledge had 2.43 times higher odds of non-adherence than those with good knowledge (AOR=2.43, 95% CI: 1.12-5.30).

Poor Attitude: Participants with a poor attitude had 2.38 times higher odds of non-adherence (AOR=2.38, 95% CI: 1.20-4.72).

Medication Discomfort: Those who experienced discomfort while taking antibiotics had 2.50 times higher odds of non-adherence (AOR=2.50, 95% CI: 1.27-4.92).

Lack of Prescription Information: Participants who did not receive information from the drug dispenser had 2.59 times higher odds of non-adherence (AOR=2.59, 95% CI: 1.29-5.23).

No	Variables	COR [95% CI]	p-value	Multivariate, AOR [95% CI]	p-value
1.	**Educational status**				
	Illiterate	1.00	0.000	1.00	0.000***
	Read and write	0.466[0.048-4.562]		0.414 [0.041-4.141]	
	Primary (1-8)	0.215[0.026-1.749]		0.141 [0.017-1.183]	
	Secondary (9-12)	0.027[0.004-0.205]		0.023 [0.003-0.176]	
	College and above	0.003[0.000-0.023]		0.003[0.00-0.023]	
2.	**Knowledge about antibiotics use**				
	Poor	0.273	0.000	2.434 [1.12-5.30]	0.025*
	Good	1.00		1.00	
3.	**Attitude towards antibiotic use**				
	Poor	0.372	0.000	2.377 [1.20-4.72]	0.013*
	Good	1.00		1.00	

4.	**Medication discomfort**				
	Yes	1.64[1.06-2.54]	0.027	2.503 [1.27-4.92]	0.008**
	No	1.00		1.00	
5.	**Had information from drug dispenser**				
	Yes	1.00	0.000	1.00	0.008**
	No	3.56[2.14-5.93]		2.594 [1.29-5.23]	

Table 2: Multivariable analysis of factors associated with antibiotic non-adherence among households in Addis Ababa, 2025 (n=507).

Discussion

This study revealed a disturbingly high prevalence of antibiotic non-adherence (79.5%) among household members in Addis Ababa. This rate is higher than findings from studies in Southern Ethiopia (60.1%) [8], Harar (34%) [11], and Jordan (40.8%) [12]. The variation could be attributed to differences in measurement tools, study populations, and the level of community awareness. The high rate in this urban setting underscores a pressing public health challenge.

Consistent with studies in Ethiopia and elsewhere [8, 13], lower educational attainment was a powerful predictor of non-adherence. Education likely empowers individuals to understand and follow medical instructions and appreciate the long-term risks of non-adherence, such as AMR.

Poor knowledge and poor attitude were significantly associated with non-adherence, aligning with previous research [8, 14]. Misconceptions, such as using antibiotics for viral infections or stopping treatment upon symptom resolution, directly contribute to improper use. This highlights a critical gap in public health education.

Experiencing discomfort from antibiotics nearly tripled the odds of non-adherence. This finding, supported by other studies [8, 15], points to the need for healthcare providers to proactively discuss potential side effects and management strategies with patients to prevent early discontinuation.

Furthermore, not receiving adequate information from the drug dispenser was a major factor. This emphasizes the crucial role of pharmacists and druggists in patient counseling. Inadequate communication at the point of dispensing represents a missed opportunity to reinforce adherence, a problem noted in studies from Portugal and other settings [16].

Conclusion and Recommendations

The study concludes that antibiotic non-adherence is a severe and prevalent issue in the studied communities of Addis Ababa. The problem is strongly driven by modifiable factors, including low health literacy, negative attitudes, medication side effects, and insufficient patient counseling.

Based on these findings, the following recommendations are made:

1. For Policymakers: Integrate antibiotic stewardship and rational use education into national health programs and mass media campaigns. Strengthen regulations to enforce the provision of prescription information at pharmacies.
2. For Health Bureaus and Administrations: Enhance monitoring of antibiotic dispensing practices in both public and private health facilities. Collaborate with community leaders and use health extension workers to disseminate information on antibiotic adherence.
3. For Healthcare Providers: Invest in training for doctors, nurses, and pharmacists to improve patient communication and counseling. Providers should always explain the importance of completing the antibiotic course, potential side effects, and the dangers of AMR in simple, understandable terms.
4. For Future Research: Further longitudinal or qualitative studies are recommended to explore the causal pathways of non-adherence and to design and test the effectiveness of specific community-based interventions.

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