

Antimicrobial resistance and rational use of medicine: knowledge, perceptions, and training of clinical health professions students in Uganda

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Abstract

Background: Antimicrobial resistance (AMR) is an important global health concern, projected to contribute to significant mortality, particularly in developing countries. This study aimed to determine the knowledge, perceptions of clinical health professions students towards antimicrobial resistance and rational use of medicine and confidence level to prescribe antimicrobials.

Methods: An online descriptive cross-sectional survey was conducted among clinical health professions students across 9 medical schools in Uganda. A semi-structured questionnaire using Kobo Toolbox form was shared among participants via WhatsApp Messenger (Meta, California, USA). Knowledge was categorized using modified Bloom's cut-off. One-way ANOVA, Chi-square or Fisher's exact test, and logistic regression were used to assess the association between dependent and independent variables. A $p < 0.05$ was considered statistically significant.

Results: We surveyed 681 participants, most were pursuing a Bachelor of Medicine and Surgery degree ($n=433$, 63.6%), with a mean age of 24 (standard deviation: 3.6) years. Most participants ($n=596$, 87.5%) had sufficient knowledge about antimicrobial resistance with a mean score of $85 \pm 14.2\%$. There was a significant difference in mean knowledge scores of year 4 (86.6%) compared to year 3 (82.4%) ($p=0.002$) and year 5 (88.0%) compared to year 3 (82.4%) ($p < 0.001$). Most participants ($n=456$, 66.9%), were confident on making an accurate diagnosis of infection, and choosing the correct antimicrobial agent to use ($n=484$, 71.1%).

Conclusion: Health profession students exhibited good knowledge on antimicrobial resistance and high self-perceived confidence on antimicrobial prescriptions however they still agreed that a separated course unit on AMR is necessary.

Background

The discovery of penicillin by Sir Alexander Fleming in 1928 is one of the greatest revolutions in therapeutics and practice of modern medicine (1). However, the current surge in antimicrobial misuse and overuse in human, agricultural and veterinary practices have escalated world-wide spread of antimicrobial-resistant organisms which has emerged as a big threat to global health (2–4). In 2019 alone, an estimated 1.27 million deaths were directly attributed to bacterial antimicrobial resistance (AMR), with sub-Saharan Africa having the greatest burden (5). It is projected that by 2050, AMR will cause up to 10 million deaths, especially in low and middle income Countries like Uganda which carry the greatest burden of severe and life-threatening infections (6,7) and approximately USD 100 trillion of the world's fiscal outputs will be splurged if definitive measures to contain the burden are not implemented (8). Although AMR develops naturally, factors like poor prescription practices, improper medication use by patients, and in some instances, inadequate health workers' knowledge on AMR accelerate its development (9,10).

All data generated or analyzed during the current study is not publicly available due to some individualized information it contains but are available from the corresponding author on reasonable request.

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Authors' Contribution

AMK, KK, and OS conceptualized and designed the study protocol. OR, JK, DO, DRN, JFA, LA, KA, DA, NKW, RB, GN, RK, RL, WO, DM and PM participated in data collection. AMK, RO and FB analyzed the data. AMK, JK, RO, and OS drafted the original manuscript. All authors reviewed and approved the final manuscript.

Competing Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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