Knowledge, Attitudes and Practices Regarding Antibiotic Use and Resistance Among Medical Practitioners at Dongola Specialized Hospital, Sudan, 2026

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1. Introduction

1.1 Background

Antibiotic resistance is one of the major global public health problems and occurs when bacteria become resistant to antibiotics, making infections more difficult to treat and increasing morbidity, mortality, and healthcare costs. According to the World Health Organization, misuse and overuse of antibiotics are the main causes of antimicrobial resistance. Medical practitioners, especially doctors, play an important role in preventing antibiotic resistance through rational prescribing and patient education. However, irrational antibiotic use remains common in Sudan due to self-medication, easy access to antibiotics without prescription, and prescribing antibiotics without proper investigations. In Dongola Specialized Hospital, antibiotics are widely used in clinical practice, and empirical prescribing may occur because of high patient load and limited laboratory facilities. Therefore, this study aims to assess the knowledge, attitudes, and practices of medical practitioners regarding antibiotic resistance in Dongola Specialized Hospital, Sudan.

1.2 Problem Statement

Antibiotic resistance (AMR) has emerged as a critical global public health threat, leading to increased morbidity, mortality, and healthcare costs. In Sudan, this crisis is severely compounded by widespread irrational antibiotic use, driven heavily by empirical prescribing without microbiological confirmation. Healthcare practitioners are key stakeholders in combating AMR, as their knowledge, attitudes, and prescribing behaviors directly influence drug utilization patterns. Despite the gravity of the situation, there is a significant paucity of updated baseline data regarding the Knowledge, Attitudes, and Practices (KAP) of medical practitioners towards antibiotic use and resistance in peripheral regions of Sudan, particularly at Dongola Specialized Hospital.Unaddressed gaps in practitioners' awareness or sub-optimal prescribing habits in this tertiary facility can accelerate resistance rates and compromise patient outcomes. Therefore, assessing the KAP among medical practitioners in this specific setting is crucial to identify descriptive deficiencies and guide future antimicrobial stewardship interventions.

1.3 Rationale

Antimicrobial resistance (AMR) is a growing global public health challenge that threatens the effective prevention and treatment of infectious diseases. Inappropriate and irrational antibiotic prescribing by medical practitioners is one of the major factors contributing to the development of antimicrobial resistance. Since physicians are the primary prescribers of antibiotics, assessing their knowledge, attitudes, and practices regarding antibiotic use and resistance is essential for identifying deficiencies that may affect rational prescribing and patient outcomes.

Dongola Specialized Hospital is a major referral hospital in the Northern State of Sudan, where antibiotics are frequently prescribed for the management of infectious diseases. However, there is limited local evidence regarding the knowledge, attitudes, and practices of medical practitioners concerning antibiotic use and antimicrobial resistance. Establishing these baseline measures will provide valuable clinical information about current prescribing behaviors and identify areas requiring improvement through education and evidence-based interventions.

The findings of this study will support the development and strengthening of antimicrobial stewardship programs within Dongola Specialized Hospital by identifying knowledge and practice gaps among medical practitioners. In addition, the results may contribute to improving local clinical protocols and antibiotic prescribing practices, ultimately promoting the rational use of antibiotics and reducing antimicrobial resistance. Furthermore, this study will help fill the existing literature gap regarding antimicrobial resistance among medical practitioners in the Northern State of Sudan and provide baseline data for future research and healthcare policy development.

1.4 Research Question:

What are the knowledge, Attitudes, and Practices of Medical Practitioners at Dongola Specialized Hospital regarding antibiotic use and antimicrobial resistance?

1.5 Objective

General Objective :

To assess the knowledge, Attitudes, and Practices regarding antibiotic use and antimicrobial resistance among medical practitioners at Dongola Specialized Hospital, Sudan, 2026.

Specific Objectives:

1. To assess the level of knowledge of medical practitioners about

antibiotic resistance .

2. To assess the attitude of medical practitioners toward antibiotic use and resistance .

3. To assess practices related to antibiotic prescription among medical practitioners .

4. To identify factors associated with poor knowledge or inappropriate practices .

2. Methodology

2.1 Study Design

A descriptive institution-based cross-sectional study will be conducted.

2.2 Study Area

The study will be carried out at Dongola Specialized Hospital, Northern State, Sudan.

2.3 Study Duration

The study will be conducted over a period of two months, from July to August 2026.

2.4 Study Population

Source population: medical practitioners at Dongola Specialized Hospital (Total = 100)

2.5 Inclusion Criteria

Medical practitioners who are present during the Data collection period and agree to participate in the study.

2.6 Exclusion Criteria

Medical practitioners who are on leave during the data collection period.

Visiting or locum medical practitioners who have worked in the hospital for less than one month.

2.7 Sample Size

The sample size was calculated using the finite population correction formula:

$n = N / [1 + N(e^2)]$

Where:

n = required sample size

N = total population = 100

e = margin of error = 0.05

Substituting the values:

$n = 100 / [1 + 100(0.05^2)]$ $n = 100 / [1 + 0.25]$ $n = 100 / 1.25$ $n \approx 80$

After adding 10% to compensate for possible non-response:

$80 \times 1.10 = 88$

Therefore, the final sample size was 88 participants.

2.8 Data Collection

The primary data collection tool for this study is a pre-designed, semi-structured questionnaire, which has been adapted from validated World Health Organization (WHO) standard templates to ensure methodological rigor. The instrument is structurally divided into distinct internal scales to align with the study's core objectives: evaluating Knowledge, Attitudes, and Practices (KAP) regarding antibiotic prescription parameters and resistance thresholds.To guarantee structural clarity, cultural appropriateness, and face validity, a preliminary pilot study will be conducted on a small sub-sample (representing approximately 10% of the total target sample size) prior to the official fieldwork. Participants involved in the pilot phase will be excluded from the final analysis to prevent selection bias.

2.9 Data Analysis

Data will be entered, cleaned, and analyzed using IBM SPSS Statistics Version 24. Descriptive statistics will be presented as frequencies and percentages. Associations between categorical variables will be assessed using the Chi-square test. A p-value < 0.05 will be considered statistically significant.

2.10 Ethical Considerations

Ethical approval will be obtained from the Research Ethics Committee of Sudan International University before conducting the study. Permission will also be obtained from the administration of Dongola Specialized Hospital. Written informed consent will be obtained from all participants before data collection. Participants' confidentiality and anonymity will be strictly maintained throughout the study, and all collected data will be used solely for research purposes.

3. Time Plan

Budget

4. References

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Task To Be Performed	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Proposal refinement & Ethical Sign Off								
Questionnaire Pilot Testing & Finalization								
Fieldwork & Active Data Collection								
Data Cleaning & System Entry								
Statistical Data Analysis								
Report Drafting & Review Loop								
Final Thesis Formatting & Submission								

Transportation	50,000 SDG
Internet and communication	20,000 SDG
Printing and stationary	15,000 SDG
Data entry and management	20,000 SDG
Statistical analysis (SPSS)	200,000 SDG
Thesis printing and binding	50,000 SDG
Unexpected expenses	36,000 SDG
Total	391,000 SDG