University of Dongola

Faculty of Medicine and Health Sciences

Department of Community Medicine

RESEARCH PROPOSAL

Knowledge Attitude And Practice Regarding Antibiotic Use and misuse Among Healthcare Worker At Aldaman Hospital ,Merowe area, Northern state, Sudan2026

By

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INTRODUCTION:-

1.1 BACKGROUND

Antibiotics are antimicrobial agents used to treat bacterial infections by killing bacteria or inhibiting their growth. They play an important role in modern healthcare and are essential for the treatment of many bacterial infections. However, antibiotics should be used only when indicated, as unnecessary or inappropriate use may expose patients to avoidable adverse effects. Appropriate antibiotic use involves selecting the correct antibiotic for the infection and following the recommended dose and duration of treatment (1).

The inappropriate use of antibiotics, including their unnecessary use and the selection of an inappropriate antibiotic, is an important public health concern. Antibiotics should only be used when clinically indicated and in accordance with appropriate treatment guidelines. Misuse and overuse of antibiotics contribute to the development and spread of antimicrobial resistance, which can make infections more difficult to treat. Therefore, promoting the rational use of antibiotics is essential to improve treatment outcomes and preserve the effectiveness of available antibiotics (2).

Healthcare workers play an essential role in promoting the appropriate use of antibiotics through rational prescribing, dispensing, and patient education. Their knowledge, attitudes, and practices can influence decisions regarding antibiotic selection, dosage, and duration of treatment. Adherence to evidence-based treatment guidelines and appropriate antibiotic-use practices is important for improving patient outcomes and minimizing unnecessary antibiotic exposure. Therefore, assessing healthcare workers' knowledge, attitudes, and practices regarding antibiotic use and misuse can help identify gaps and inform interventions to promote the rational use of antibiotics in healthcare settings (3).

1.2 problem statement

Inappropriate antibiotic use is a major public health concern. A study conducted among healthcare providers in Kinshasa, Democratic Republic of Congo, reported deficiencies in antibiotic knowledge and prescribing practices. However, information regarding healthcare workers' knowledge, attitudes, and practices concerning antibiotic use and misuse at Al-Daman Hospital, Merowe, Northern State, Sudan, remains limited. Therefore, this study aims to assess these aspects to identify gaps and inform interventions to promote the rational use of antibiotics.

1.3Justification:

Inappropriate antibiotic use is a major public health concern, as it may lead to treatment failure and contribute to the development of antimicrobial resistance.(2).

Inappropriate use of antibiotics is the main driver of resistance, including over-prescription, self-medication, and poor adherence to guidelines(.3)

Healthcare workers play a critical role in rational prescribing, patient education, and infection control. Their knowledge, attitudes, and practices (KAP) directly influence antibiotic use.(4),Limited studies are available in Sudan

1.4 Research Question:-

1.What is the level of knowledge regarding antibiotic use and misuse among healthcare workers at Al-Daman Hospital, Merowe?

2.What are the attitudes of healthcare workers towards appropriate antibiotic use and antibiotic misuse?

3.What are the practices of healthcare workers regarding antibiotic prescription, dispensing, and use?

Research objectives:-

General objectives

To assess knowledge,attitude and practice of healthcare workers towards antibiotics use and misuse in Sudan northern state Merowe locality Aldaman hospital.

Specific objectives;

1-to assess level knowledge of healthcare workers regard causes, consequence,and their role in prevention of antibiotics resistance

2-To evaluate attitude of healthcare workers toward rational antibiotics use

3-To determine the practice of healthcare worker in prescribing,dispensing antibiotics,and their commitment to protocols and guidelines

Previous studies:

International Literature

Alam et al. (2023) conducted a cross-sectional study among a rural population in Bangladesh and found important gaps in knowledge and practices regarding antibiotic use. Half of the participants were unaware that antibiotics are ineffective against viral infections, while 60% reported incomplete antibiotic courses. In addition, 30% reported sharing antibiotics and 40% reported improper disposal. The study also found that antibiotics were obtained from different sources, including informal providers and pharmacy keepers. These findings demonstrated inappropriate antibiotic-use practices among the studied population(4).

Global Literature

Awad et al. (2006) conducted a study in health centres in Khartoum State, Sudan, to evaluate antibiotic prescribing practices and the effectiveness of interventions aimed at improving appropriate antibiotic use.

The study included 1,800 patient encounters from 20 health centres. The findings revealed inappropriate antibiotic prescribing in relation to diagnosis, drug selection, dosage, and duration of treatment. Interventions combining prescription audit and feedback with educational seminars or academic detailing significantly reduced inappropriate prescribing. The study highlighted the need to improve prescribing practices and implement educational interventions to promote rational antibiotic use in Sudan (5).

Local Literature

Abuelgasim et al. (2026) conducted a descriptive cross-sectional study at Dongola Specialized Hospital, Northern State, Sudan, to assess healthcare workers' knowledge, attitudes, and practices regarding antibiotic use and antimicrobial resistance. The study included 252 healthcare workers, including doctors, pharmacists, and nurses. The findings showed that 57% had good knowledge, 56% demonstrated positive attitudes, and only 23% had good practices. The study concluded that adequate knowledge does not necessarily translate into appropriate antibiotic-use practices and highlighted the importance of interventions that address practical barriers to rational antibiotic use (6).

3. Research Methodology:

3.1 Study Design:

It is a descriptive cross-sectional study .

3.2 Study Settings:

This study will be conducted at Aldaman hospital .

3.3Study Population:

The study will be consist of all healthcare worker of Aldaman hospital In our study we aim to select a representative sample to ensure that the finding is generalizable .

Inclusion Criteria:

All healthcare workers currently working at Aldaman Hospital who are directly involved in patient care or drug use, including:

A. Doctors (house officers, registrars, specialists, consultants).
B. Nurses.
C. Pharmacists.
D. Present during data collection time and accept participation and giving informed consent.

Exclusion Criteria:

A. Non medical staff (administrative workers,cleaners,security personnel,etc.), as they are not directly involved in prescribing, dispensing, or using antibiotics.

B. Laboratory technicians and radiology staff, since their roles do not routinely include prescribing or dispensing antibiotics.

C. Healthcare workers absent during data collection,or not accept participation for any reason.

3.4Data Collection:

Simple structured , close ended questionnaire will be designed to assess KAP of the study population towards antibiotics use and misuse to based on previous valid KAP studies .

3.5 Sample Size and Sampling Techniques:

Using the formula, n= N/ (1 +N(d)2)

n= the sample size.
N= population size. d= level of precision=0.05

Sample technique:

A stratified random sampling technique will be done, the total population HCWs will be divided into three category as mentioned above, for each stratum a random sample will be selected to ensure that all key professional categories adequately represented in study sample,reduce sample bias,and increase validity and generalizability of findings

The Data Analysis Plan:

Data will be analyzed using a statistical soft were (eg.SPSS) . Comparison between study variables data will be calculated using the t-test and Categorical variables will be summarized using frequencies and percentages. Continuous variables will be summarized using means and standard deviations when approximately normally distributed, or medians and interquartile ranges when appropriate.

3.6The Data Collection Tool:

To ensure accuracy and efficiency data will be collected electrically using smart-phones applications(google forms, kobo toolbox)

4. Study Duration:

The study will be completed in the period from Oct 2026 up to Nov2026

Ethical Concern:

We well request informed consent from ministry of health administration of researches.

We well request informed consent from administration of aldaman hospital as study setting

We well request informed consent from participants.

Time plan

The study activities will be implemented according to the following schedule:

Activity	Sep 2026	Oct 2026	Nov 2026	Dec 2026	Jan 2027
Proposal finalization and supervisor approval	✓				
Ethical and administrative clearance	✓	✓			
Preparation and pilot review of data collection form		✓			
Retrospective data collection		✓	✓		
Prospective data collection		✓	✓		
Data cleaning and coding			✓	✓	
Data analysis and interpretation				✓	
Final report writing and revision				✓	✓
Final submission					✓

Budget outline

Items	No. needed	Cost per item	Total cost
Data collection	0	-	0,00
Data entry& analysis	1	120,000	120,000
Fieldwork transportation	10 2	10,000 110,000	100,000 220,000
Internet subscription fees	4	40,000	160,000
Report printing	3	50,000	150,000
total			750,000

References

1. Centers for Disease Control and Prevention. Antibiotic use and antimicrobial resistance facts [Internet]. Atlanta (GA): CDC; 2024 Apr 22 [cited 2026 Oct 23]. Available from: https://www.cdc.gov/antibiotic-use/data-research/facts-stats/index.html

2. World Health Organization. Global action plan on antimicrobial resistance. Geneva: World Health Organization; 2015.

3. World Health Organization. Antimicrobial stewardship programmes in health-care facilities in low- and middle-income countries: a WHO practical toolkit [Internet]. Geneva: World Health Organization; 2019 [cited 2026 Oct 23]. Available from: https://www.who.int/publications/i/item/9789241515481

4. Alam S, Husna GZA, Atef F, Debnath J, Morshed SMM, Rahman S. Knowledge, attitudes, and practices regarding antibiotic use in rural Bangladesh. Planet (Barisal) [Internet]. 2024 Dec 14 [cited 2026 Oct 23];7(2):96-103. Available from: https://www.bdjournals.org/planet/article/view/568

5. Awad AI, Eltayeb IB, Baraka OZ. Changing antibiotic prescribing practices in health centers of Khartoum State, Sudan. Eur J Clin Pharmacol. 2006;62(2):135-142. doi:10.1007/s00228-005-0089-4.

6. Abuelgasim WMH, Gamea MHE, Shadoul AMF, Ahmed AAA, Hamed OMS, Zain AM. Knowledge, attitude, and practice of healthcare workers regarding antibiotic use and antimicrobial resistance at Dongola Specialized Hospital, Sudan, 2025. Medical Science: Updates and Prospects. 2026;12:87-115. doi:10.9734/bpi/msup/v12/7705.

5. ANNEXES

Annex I: Data Collection Form

Study title: Knowledge, Attitudes and Practices Regarding Antibiotic Use and Antibiotic misuse among Healthcare Workers at Al-Daman Hospital, Merowe, Northern State, Sudan.

Section	Information
Study identification	Study ID; date of data collection; healthcare worker category
Demographic data	Age; sex; profession; years of experience; department

Knowledge	Appropriate antibiotic use; antibiotic misuse; causes and prevention
Attitudes	Attitudes towards rational antibiotic use and antibiotic misuse
Practices	Prescribing/dispensing practices; use of guidelines; antibiotic selection and duration
Training & guidelines	Previous training; availability and access to guidelines
Eligibility	Meets approved study criteria: Yes / No

Annex II: Administrative and Ethical Documents

The administrative and ethical documents will include ethical clearance application and approval, hospital administrative permission letter, final data collection questionnaire, participant information and informed consent form, and data confidentiality and management plan.