

**Arab American University
Faculty of Graduate Studies
Department of Health Sciences
Master Program in Adult Medical –
Surgical - Nursing**



**Nurses' Knowledge and Attitudes toward Antibiotic use and
Prevention of Antibiotic Resistance in the medical and surgical
departments at governmental and nongovernmental Hebron
hospitals.**

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**This Thesis Was Submitted in Partial Fulfillment of the
Requirements for the Master Degree in Adult Medical – Surgical -
Nursing**

Palestine, 2 / 2025

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Thesis Approval




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Declaration

I declare that, except where explicit reference is made to the contribution of others, this thesis is substantially my own work and has not been submitted for any other degree at the Arab American University or any other institution.

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Dedication

This thesis is dedicated with profound gratitude to my parents, whose boundless love and unwavering support have been a constant source of strength and inspiration. Their encouragement and belief in my abilities have driven me to persevere through challenges and pursue excellence. I am deeply thankful for their sacrifices and the countless moments they have spent uplifting and supporting me. This work stands as a reflection of their unwavering faith in the transformative power of education and their pivotal role in shaping the person I am today.

I extend my heartfelt appreciation to my thesis supervisor, Dr. Imad Fashafsheh, for his invaluable guidance, insightful feedback, and steadfast commitment throughout this research journey. His mentorship has not only sharpened my academic skills but also inspired me to push beyond my limits. This thesis would not have been possible without his dedication and encouragement.

Additionally, I dedicate this work to the martyrs of Gaza, whose courage and sacrifices in the pursuit of justice and freedom serve as a profound reminder of the importance of standing up for what is right. Their resilience in the face of adversity continues to inspire me to use my education as a tool for advocating for peace, justice, and positive change.

May their memory live on as a testament to their bravery, and may their sacrifices never be forgotten. This thesis is a humble tribute to their enduring spirit and a symbol of my commitment to striving for a better, more just world.

In loving memory of the martyrs of Gaza, and with deep gratitude to my parents and my supervisor, I dedicate this work.

Mohammad Shoa'b Dageameen

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Nurses' Knowledge and Attitudes toward Antibiotic use and Prevention of Antibiotic Resistance in the medical and surgical departments at governmental and nongovernmental Hebron hospitals.

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Abstract

Introduction: antibiotic resistance (AR)—the capability of a bacteria to resist the drug affection (FDA .2023). antibiotics are drugs used to inhibit bacterial infections and treat it. Antibiotic resistance arises when bacteria change doesn't response to the use of the antibiotic (WHO.2020). it is considered as a global public health issue.

Aim: this study aimed to assess nurses' knowledge and attitudes toward antibiotic use and Prevention of Antibiotic Resistance in the medical and surgical departments at governmental and nongovernmental Hebron hospitals.

Method: a Cross-sectional study, quantitative, observational study. with census sample of 191 nurse (n= 191) from nongovernmental and governmental hospitals in Hebron, data were collected using an anonymous electronic questionnaire (google form)

Results: the findings demonstrated that nurses exhibited moderate knowledge regarding antibiotic use and resistance prevention; however, their attitudes were largely negative, highlighting a pressing need for improvement. Significant correlations were observed between nurses' knowledge and attitudes and sociodemographic factors, including years of experience, engagement with professional literature, participation in workshops, and institutional protocols ($p < 0.05$). The majority of participants were female (54.45%), aged 26–30 years (40.83%), held a Bachelor's degree in Nursing (39.79%), and worked in non-governmental hospitals (51.83%). These results underscore the need for targeted educational interventions and institutional policies to enhance nurses' competencies in combating antibiotic resistance.

Conclusion: according to the current study, nurses even are not entirely cognizant of the fundamentals of antibiotics, antibiotic resistance and the techniques to be used in order to prevent it. this rises the importance of creating a comprehensive and overmantel education program for healthcare staff in all hospital about the propre use of antibiotic.

Keywords: Knowledge, Attitude, Nurses, Antibiotic, Resistance.

Table of Contents

#	Title	Page
	Declaration	I
	Dedication	II
	Acknowledgements.....	III
	Abstract	IV
	List of Tables.....	VII
	List of Figures	VIII
	List of Appendices	IX
	List of Definitions of Abbreviations	X
	Chapter One: Introduction	1
1.1	Introduction	1
1.2	Problem Statement:	3
1.3	Significance of the Study	4
1.4	Objectives of the study	4
1.5	Research Questions	5
1.6	Study variables	5
1.6.1	dependent variables	5
1.6.2	independent variables	5
1.7	theoretical and operational definitions	6
1.7.1	Conceptual definition (Main Variables).....	6
1.7.2	Operational Definition	6
1.8	Study Framework	7
1.9	Summary	8
	Chapter Two: Literature Review	9
2.1	Introduction	9
2.2	Health care worker	9
2.2.1	Palestine states studies:.....	9
2.2.2	International states studies:.....	11
2.2.3	Nurses' studies	13

2.2.4 Antibiotic Consumption and Resistance Patterns among patient in Palestine.....	16
2.3 Conclusion.....	17
Chapter Three: Methodology	18
3.1 Introduction	18
3.2 Research design.....	18
3.3 Study settings	18
3.4 Study population	19
3.5 Study Sample.....	19
3.6 Inclusion and exclusion criteria.....	20
3.6.1 Inclusion Criteria:	20
3.6.2 Exclusion Criteria:	20
3.7 Instrument of the study.....	20
3.8 Validity and Reliability.....	21
3.9 Pilot Study.....	21
3.10 Data Collection Process and analysis.....	22
3.11 Statistical plan	22
3.12 Ethical Consideration	23
Chapter Four: Results	24
4.1 Introduction	24
4.2 Summary	32
Chapter Five: Discussion and Conclusion	33
5.1 Discussion	33
5.2 Conclusion.....	35
5.3 Recommendations	35
5.4 Limitations:	35
5.5 Study implication:	36
References.....	37
Appendices.....	40
ملخص.....	49

List of Tables

Table #	Title of Table	Page
Table 3.1:	Study setting and population.....	18
Table 4.1:	Frequency of demographic characteristics.....	24
Table 4.2:	Nurses' knowledge about antibiotics uses and prevention in governmental and non-governmental hospitals in Hebron. (N=191).	25
Table 4.3:	Total knowledge score regarding nurse's antibiotic use (N=191).....	27
Table 4.4:	Nurses' attitudes about antibiotics use and prevention in governmental and non-governmental hospitals in Hebron. (N=191)	28
Table 4.5:	Nurses attitudes scores related to antibiotic use and resistance prevention. (N=191).	30
Table 4.6:	Correlation Between Knowledge and Attitude.	30
Table 4.7:	Sociodemographic characteristic and their relation with knowledge and attitude. (N=191).....	31

List of Figures

Figure #	Title of Figures	Page
	Figure 1.1: Variables that could affect the Antibiotic uses and Prevention of Antibiotic Resistance in the medical and surgical departments outcome.	7

List of Appendices

Appendix #	Title of Appendix	Page
Appendix 1: Research Tool.....		40
Appendix 2: IRP Approval.....		45
Appendix 3: Hospital Approval "Non-GOV"		46
Appendix 4: Hospital Approval" GOV"		47
Appendix 5: Participants Consent form.....		48

List of Definitions of Abbreviations

Abbreviations	Title
AR	Antibiotic resistance
AMR	Antimicrobial resistance
IPC	Infection prevention and control
EFN	European Federation of Nurses Associations
MDRO	multidrug-resistant organism
CPD	continuing professional development
NAP	National Action Plan
ICU	intensive care unit
GNB	Gram-negative bacteria
GPB	Gram-positive bacteria
KAP	Knowledge, Attitudes, and Perceptions
DTR	difficult-to-treat resistance
WHO	World Health Organization
MOH	Ministry of Health
FDA	Food and Drug Administration

Chapter One: Introduction

1.1 Introduction

According to World Health Organization (WHO.2019) nurses are the shape of health care institution and they are professionals who cover and work in a cooperative way to deliver the best care for individuals of all groups, families, ages and communities in all locations.

According to the latest report by the Palestinian Ministry of Health (MOH), there are 12195 nurses in the Gaza Strip and 13016 nurses in the West Bank, with a total of 25211 nurses in Palestinian hospitals (MOH, 2022) as a last Palestinian update. as resource individuals in establishing and maintaining infection control practices, nurses play a significant role in these efforts. additionally, nurses contribute to the success of care programs by participating in antibiotic stewardship. to provide accurate and thorough information regarding antibiotic use, nurses must be skilled in dealing with antibiotic-resistant patients and exhibit the right attitude. this approach can help reduce resistance in patients and the broader population (D. S. Lalithabai et al., 2022).

Antibiotic resistance (AR)—the capability of a bacteria to resist the drug affection —is a compound and costly public problem (FDA .2023). antibiotics are drugs used to treat and prevent bacterial infections (WHO, 2020). antibiotic resistance arises when bacteria change and no longer respond to antibiotics (WHO, 2020). the declining efficacy of antibiotics imposes significant financial and health burdens on societies worldwide. measuring the economic effects of antibiotic resistance can assist policymakers and healthcare workers in setting priorities (Gandra et al., 2014).

Antibiotic resistance poses a significant challenge in public health, as bacteria develop various mechanisms to evade the effects of antibiotics. these mechanisms include altering antibiotic components, expelling antibiotics from bacterial cells, modifying outer structures to prevent antibiotic attachment, and genetic mutations. resistance can be intrinsic, where bacteria naturally lack susceptibility to certain antibiotics, or acquired, where bacteria develop resistance through mutations or by acquiring resistance genes from other bacteria. genetic changes in bacterial DNA may lead to altered protein production and unrecognizable bacterial components. horizontal gene transfer also enables bacteria to share resistance genes. examples include Mycobacterium

tuberculosis and Escherichia coli, with organisms like E. coli and Enterococcus demonstrating resistance to multiple antibiotics, complicating treatment strategies (Habboush & Guzman, 2024).

Antibiotics are undoubtedly life-saving medications, significantly reducing morbidity and mortality since their introduction. they have been essential in combating lethal bacterial infections by either eliminating the bacteria or slowing their growth. However, the misuse and overuse of antibiotics have become a global concern, particularly for health authorities (Razaf et al., 2021). in 2019, antibiotic-resistant infections were responsible for over 1.2 million deaths worldwide (Bill & Melinda Gates, 2022). the highest mortality rates directly linked to antibiotic resistance (AR) were observed in Sub-Saharan Africa and South Asia, with 22–24 deaths per 100,000 people. in comparison, high-income countries reported a lower AMR-related mortality rate of 13 deaths per 100,000 (Bill & Melinda Gates, 2022).

Infection prevention and control (IPC) is an evidence-based approach that prevents harm from avoidable infections in both patients and healthcare workers (WHO, 2022). effective IPC requires continuous efforts at all levels of the healthcare system, involving policymakers, facility managers, healthcare workers, and patients. it is essential for patient safety and care quality, as inadequate IPC can lead to harm or death. IPC covers areas such as hand hygiene, surgical site infections, injection safety, antimicrobial resistance, and hospital operations during emergencies. IPC is particularly critical in low- and middle-income countries, where secondary infections can exacerbate healthcare delivery challenges and hygiene issues (WHO, 2022).

Frontline nurses, due to their close relationships with patients, play a vital role in combating AR. Effective strategies must include health policies and national action plans aligned with nurses' perspectives. addressing AR requires a One Health approach that integrates various sectors. nurses, especially those with prescribing authority and advanced practice roles, are key in reducing AR through comprehensive, patient-centered care, including managing complex conditions, optimizing medication use, and implementing best practices. the European Federation of Nurses Associations (EFN) advocates for the inclusion of nurses in policy development, recognizing their significant role in achieving sustainable health and ecosystem goals (De Raeve & Bergs, 2024).

Nurses play a multifaceted role in combating antibiotic resistance. they serve as frontline educators, ensuring patients understand the importance of proper antibiotic use and the risks of

misuse (D. S. Lalithabai et al., 2022). as integral members of antibiotic stewardship programs, nurses work to optimize prescribing practices and monitor usage (Hassan et al., 2024). Additionally, nurses contribute to data collection, reporting, and research efforts, providing crucial insights into antibiotic usage and patient outcomes. through community outreach initiatives, they raise awareness and promote responsible antibiotic use beyond healthcare settings. nurses' diverse contributions are essential in addressing the complex challenge of antibiotic resistance (D. S. Lalithabai et al., 2022).

This baseline study aims to assess nurse attitude and knowledge regarding antibiotic use and how to prevent antibiotic resistance in the medical and surgical department of governmental and nongovernmental Hebron hospitals.

1.2 Problem Statement:

Antibiotic resistance (AR) is rising seriously all around the world. A growing list of infections—such as gonorrhea, foodborne diseases, pneumonia, blood poisoning, and tuberculosis—are becoming harder, and sometimes nearly impossible, to treat because antibiotics are becoming less effective (WHO, 2022). AR causes 33,000 fatalities annually in Europe. the annual cost of healthcare and lost productivity due to antibiotic resistance is estimated at EUR 1.5 billion (Nilsson et al., 2021). globally, more than 1.2 million people died in 2019 as a result of antibiotic-resistant infections, according to the global impact of antibiotic resistance (Bill & Melinda Gates, 2022).

Antibiotic resistance has the potential to seriously harm public health. earlier studies revealed that AR kills approximately 700,000 people annually. in 2019, bacterial antimicrobial resistance was associated with an estimated 4.95 million deaths globally. annual treatment costs resulting from antimicrobial resistance are estimated at \$4.6 billion in the United States alone. as a recent study on the global burden of bacterial antimicrobial resistance in 2019 indicated, the AR burden was highest in sub-Saharan Africa and disproportionately higher in low- and middle-income countries (Odieh et al., 2022).

Nurses in hospitals play a vital role in preventing the transmission of resistant bacteria and promoting awareness of antibiotic resistance among the general population. they achieve this by scientifically managing antibiotics and preventing errors in their use. thus, understanding nurses' knowledge and attitudes about antibiotic resistance is crucial for determining how it develops

and how to implement more effective interventions to contain it. nurses with good knowledge and a positive attitude toward AR can help reduce nosocomial infections and prevent the spread of resistant bacteria among patients. conversely, poor knowledge and negative attitudes can lead to an increase in such cases worldwide (Jayaweerasingham et al., 2019).

In Palestine few studies have examined nurses' knowledge and attitudes regarding antibiotic use and the prevention of antibiotic resistance in medical and surgical departments. therefore, the current study aims to assess nurses' knowledge and attitudes toward antibiotic use and the prevention of antibiotic resistance in the medical and surgical departments of governmental and nongovernmental Hebron hospitals.

1.3 Significance of the Study

Antibiotics are a primary component of treatment for both healthcare teams and patients. the effective use of antibiotics saves patients' lives, reduces mortality rates, and consequently lowers healthcare consumption (Muteeb et al., 2023). on the other hand, the misuse of antibiotics can harm patients' lives by leading to antibiotic resistance, which in turn increases healthcare costs (Muteeb et al., 2023). the findings of this study benefit society and the healthcare system, especially since nurses' knowledge and attitudes regarding antibiotic use and the prevention of antibiotic resistance play a vital role in reducing morbidity and mortality rates in Palestine. the growing demand for nurses highlights the need for more effective, life-changing decisions by all healthcare teams (National Academies of Sciences, Engineering, and Medicine et al., 2021).

Various studies have been conducted to evaluate knowledge, attitudes, and perceptions (KAP) among physicians regarding antibiotic resistance. many of these studies have been carried out in the United States, Turkey, Pakistan, India, Malaysia, Palestine, France, Scotland, and other countries (Jabarin et al., 2023). understanding nurses' knowledge and attitudes about antibiotic resistance is essential for developing behavior change interventions (Lalithabai et al., 2022). so, the aim of this survey was to assess nurses' knowledge and attitudes, about antibiotic use and how to prevent antibiotic resistance in Palestine Hebron hospitals.

1.4 Objectives of the study

This study aimed to assess nurses' knowledge and attitudes toward antibiotic use and the prevention of antibiotic resistance in the medical and surgical departments of governmental and nongovernmental hospitals in Hebron.

1.5 Research Questions

1. What is the level of medical and surgical nurses' knowledge towards antibiotic uses and prevention of antibiotic resistant in Governmental and nongovernmental Hebron hospitals?
2. What is the level of medical and surgical nurses' attitude toward antibiotic uses and prevention of Antibiotic resistant in Governmental and nongovernmental Hebron hospitals?
3. Is there difference in knowledge of Antibiotic use and Prevention of Antibiotic Resistance regarding participants demographic and professional characteristics?
4. Is there difference in attitudes of Antibiotic use and Prevention of Antibiotic Resistance regarding participants demographic and professional characteristics?
5. Is there relationship between knowledge and attitude towards antibiotic uses and prevention of antibiotic resistant in Governmental and nongovernmental Hebron hospitals?

1.6 Study variables

1.6.1 dependent variables

1. Knowledge
2. Attitudes

1.6.2 independent variables

Demographic characteristics include age, marital status, gender, and level of education. And professional characteristics encompass work-related factors such as employment status (e.g., full-time or part-time), current position, duration of working experience, and the number of years spent in medical-surgical departments. Additionally, professional characteristics include whether the individual follows a specific antibiotic use protocol in their hospital, has ever read articles or guidelines related to antibiotic use or resistance, and whether they have participated in workshops focused on antibiotic use or resistance.

1.7 theoretical and operational definitions

1.7.1 Conceptual definition (Main Variables)

Nurses' Knowledge: refers to the collective understanding, information, and expertise possessed by nursing professionals, encompassing a diverse range of theoretical, practical, and experiential insights essential for delivering high-quality patient care (Polit, & Beck, 2017).

Nurses' Attitudes: Attitudes: is personal or mental view toward activities, object, person or something. Or it is a set of emotions, believes, and behavior when caring for something (Shawamri.K,.2022).

Related Factors: These are additional elements that might influence nurses' knowledge and perception of practice. These could include education level, years of experience, availability of resources, hospital policies, training programs, and cultural factors

(Abdelaliem & Alsenany, 2022).

1.7.2 Operational Definition

Knowledge

Variable: Nurses' knowledge of antibiotic uses and prevention of antibiotic resistance

Operational Definition: This variable is assessed using a set of knowledge questions in the anonymous electronic questionnaire. These questions are designed to evaluate the participants' understanding of various aspects of antibiotic use and prevention of antibiotic resistance. Each question requires respondents to select one of the following options: "I don't know, No, or Yes. This format allows for a clear assessment of the nurses' theoretical knowledge about Antibiotic uses and its prevention.

Instrument: The knowledge section of the questionnaire includes statements related to antibiotic use and prevention of antibiotic resistance, such as the relationship between using over the counter medication and antibiotic resistance. The responses to these questions will provide insights into the extent of the nurses' knowledge and identify areas where further education may be needed.

Attitude

Variables: Nurses' attitude of antibiotic uses and prevention of antibiotic resistance

Operationally definition: This variable is assessed using a set of attitude questions in the anonymous electronic questionnaire. These questions are designed to evaluate the participants' understanding of various aspects of antibiotic use and prevention of antibiotic resistance. Each question requires respondents to select one of the following options: always, sometime, or never. This format allows for a clear assessment of the nurses' theoretical attitude about Antibiotic uses and its prevention.

Instrument: The attitude section of the questionnaire includes statements related to antibiotic use and prevention of antibiotic resistance, such as the Playing an active role in educating patients and families on the risk of antibiotic resistance, Following clinical pathways in the management of infectious diseases. The responses to these questions will provide insights into the extent of the nurses' knowledge and identify areas where further education may be needed.

1.8 Study Framework

The study framework was drawn to be suitable for my thesis project; it describes the variable that could affect the Antibiotic uses and Prevention of Antibiotic Resistance in the medical and surgical departments outcome as in Figure 1 below:

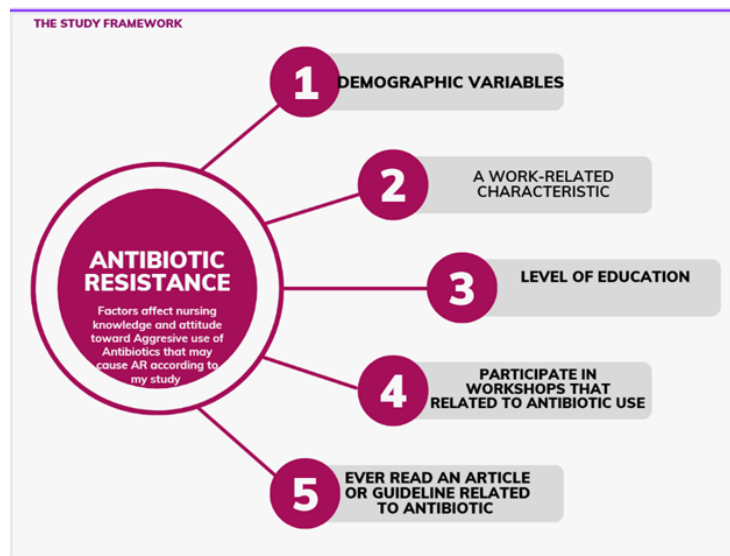


Figure 1.1: Variables that could affect the Antibiotic uses and Prevention of Antibiotic Resistance in the medical and surgical departments outcome.

1.9 Summary

Chapter One introduces the research study, which explores nurses' knowledge and attitudes toward antibiotic use and the prevention of antibiotic resistance in the medical and surgical departments of governmental and nongovernmental hospitals in Hebron.

Antibiotic resistance is a major global public health challenge, posing a serious threat to the effective treatment of infectious diseases. According to the World Health Organization (WHO, 2020), antibiotic resistance ranks among the top ten global health threats, largely driven by the misuse and overuse of antibiotics. As frontline healthcare professionals, nurses play a critical role in antibiotic stewardship efforts, ensuring the appropriate use of antibiotics and helping to prevent the emergence and spread of resistant bacteria (Manning et al., 2020).

In clinical settings, nurses serve as the primary point of contact for patients, making them integral to infection control and antibiotic management. Their responsibilities include educating patients on medication adherence, administering antibiotics, and monitoring for potential adverse reactions and signs of infection (Kilpatrick et al., 2023). Given their pivotal role, nurses' knowledge and attitudes toward antibiotic use significantly influence clinical practices and the overall success of antibiotic stewardship programs (Hassan et al., 2024). Assessing nurses' knowledge and attitudes regarding antibiotic use and resistance is essential for developing effective educational interventions and policies that enhance their contribution to combating antibiotic resistance. By identifying gaps in knowledge and understanding behavioral factors, healthcare institutions can implement targeted training programs and strategies to strengthen antibiotic stewardship practices (Lalithabai et al., 2022).

This study aims to evaluate nurses' knowledge and attitudes toward antibiotic use and the prevention of antibiotic resistance—an essential step in improving patient care and protecting public health. Recognizing the beliefs and perceptions that influence nurses' behaviors can help design interventions that enhance their knowledge and promote responsible antibiotic use. Ultimately, such initiatives can contribute to reducing antibiotic resistance, lowering healthcare costs, and improving health outcomes in the region (Jabarin et al., 2023).

Chapter Two: Literature Review

2.1 Introduction

In this chapter, the researcher reviewed previous studies related to AR, focusing on nurses' knowledge, attitudes toward antibiotic use, and the prevention of AR. the researcher utilized multiple databases, including EBSCO, PubMed, and Google Scholar, to gather up-to-date information on this topic, covering studies published between 2019 and 2024.

Around 80% of antimicrobials are used within the community. these antimicrobials are either prescribed by a healthcare professional or obtained directly by consumers without a valid prescription from various sources, including community pharmacies (Auta et al., 2019). in many countries, the supply of antimicrobials without a prescription is illegal. However, over 50% of antimicrobials globally are obtained without a prescription, and community pharmacies are a major source of non-prescribed antimicrobials (Auta et al., 2019).

Many studies have assessed knowledge and attitudes toward antibiotic use and antibiotic resistance, this chapter review them below as part of the literature review. These divided into three categories: healthcare workers (Palestinian and international), nursing, and antimicrobial consumption and resistance patterns among patients in Palestine over the last five years.

2.2 Health care worker

2.2.1 Palestine states studies:

The issue of antibiotic resistance has become a significant global concern, necessitating in-depth studies across different healthcare contexts to develop effective strategies for its management (Chinemerem Nwobodo, Ugwu et al. 2022). Three recent studies focused on Palestine provide valuable insights into the knowledge, attitudes, and practices of healthcare professionals regarding this critical issue.

In a survey conducted among 150 physicians in Palestinian hospitals, particularly in the Hebron and Bethlehem governorates, Jabbarin et al. (2023) achieved a response rate of 91.33%, with 137 physicians completing the questionnaire. most participants perceived antibiotic resistance as a significant global concern (69.3%) and recognized it as a problem within their country (54.7%), their hospitals (54.0%), and their departments (59.1%). Methicillin-resistant

Staphylococcus aureus (MRSA) was identified as the most well-known antibiotic-resistant bacterium. Contributing factors to resistance included self-medication (67.2%), overuse of antibiotics (60.6%), and incomplete treatment (63.5%). The study found that senior specialists/consultants had a greater knowledge of antibiotic resistance. The authors emphasized the need for targeted educational interventions to enhance physicians' understanding and attitudes toward antibiotic resistance, thereby promoting responsible antibiotic use and contributing to global efforts to combat antimicrobial resistance.

Al-Halawa et al. (2023) conducted a cross-sectional survey between October 2021 and February 2022 to investigate the knowledge, attitudes, and practices of Palestinian pharmacists concerning antibiotic resistance. The study involved 167 pharmacists from community pharmacies in the West Bank, selected using a three-step random sampling method. The results indicated that 60% of pharmacists dispensed antibiotics without a prescription, highlighting a significant issue of indiscriminate antibiotic dispensing. Most pharmacists recognized the risks associated with inappropriate antibiotic use, with 92.1% acknowledging that it could lead to ineffective treatment and 86.2% disagreeing with stopping antibiotics upon symptom improvement. Despite this, only 17.1% disagreed with the notion that antibiotics should always be used for upper respiratory infections. There were notable gaps in knowledge, with 71.7% and 53.3% of pharmacists feeling confident in their understanding of antibiotic pharmacology and resistance, respectively. The study stressed the importance of educational initiatives and legislative measures to address antibiotic misuse and resistance in Palestine.

Abuawad et al. (2024) explored the knowledge, perceptions, and attitudes of Palestinian medical students towards antimicrobial resistance and stewardship. This cross-sectional study, conducted between December 2022 and February 2023 at An-Najah National University and Al-Quds University, included 384 students from both preclinical and clinical training stages. The findings revealed that clinical students had significantly higher knowledge and perceptions about microbial resistance and antimicrobial stewardship compared to their preclinical counterparts. The study highlighted the necessity of enhanced educational initiatives to better equip future physicians with the skills and knowledge required to effectively combat antimicrobial resistance.

2.2.2 International states studies:

The use of antibiotics and the growing concern over antibiotic resistance have prompted numerous studies focusing on the knowledge, attitudes, and practices (KAP) of healthcare providers (Azim et al., 2023). These studies highlight the disparities in understanding and behaviors among different healthcare groups, revealing significant gaps that need addressing to combat antibiotic resistance effectively.

Nair et al. (2019) conducted a study to assess the knowledge, attitudes, and practices (KAP) related to antibiotic use among a diverse group of healthcare providers, including allopathic doctors, nurses, informal providers, and pharmacy shopkeepers, with a sample of 384 participants. The findings highlighted several issues, especially among nurses, 62% of whom reported dispensing antibiotics for conditions such as colds and sore throats. Although nearly all nurses (98.9%) recognized the importance of antibiotic knowledge, misconceptions persisted, with 65% incorrectly believing that antibiotics could treat viral infections. Furthermore, 45% admitted to prematurely stopping antibiotic courses. The nurses and other informal healthcare providers had a KAP score of 73.5%, indicating significant knowledge gaps and a disconnect between knowledge and practice. The study emphasized the need for targeted interventions to improve antibiotic practices and highlighted the importance of ensuring that all healthcare providers, including allopathic physicians, align their knowledge with clinical practices.

Barchitta et al. (2021) conducted a study comparing the KAP regarding antibiotic use and resistance among different groups of Italian healthcare workers (HCWs) using the European Centre for Disease Prevention and Control (ECDC) online questionnaire. This study included 1693 participants across various professional groups. It revealed that nurses and other HCWs demonstrated the highest awareness of the national action plan on antibiotic resistance but had the lowest knowledge of antibiotic use and resistance. Notably, 81.9% of this group recognized the importance of hand hygiene. Despite having access to guidelines and opportunities to advise on prudent antibiotic use, there were significant gaps in understanding the connection between antibiotic prescribing and the spread of resistant bacteria. These findings underscore the need for tailored educational interventions to enhance knowledge and promote prudent antibiotic practices among healthcare professionals in Italy.

Nwafia et al. (2022) evaluated the KAP regarding antibiotic use and resistance among healthcare workers at the University of Nigeria Teaching Hospital (UNTH) in Enugu, Nigeria. The study included 600 healthcare workers. The findings showed that the overall level of knowledge about antibiotic use and resistance was moderate at 58.8%, followed by attitude (49.1%) and practice (24.3%). Knowledge about specific resistant organisms was relatively low. The internet was the primary source of information for most participants. Less than half consistently conducted laboratory investigations before starting antibiotics, and a significant portion (62.2%) admitted to discontinuing antibiotic courses once their symptoms improved. While the majority recognized the risk of acquiring antimicrobial-resistant organisms (91.2%), a smaller percentage (67.7%) believed that UNTH faced the same problem. The study highlighted the need for improved education and awareness regarding appropriate antibiotic use and resistance, suggesting behavioral interventions to address misconceptions and promote better practices.

Briquet et al. (2023) explored barriers to effective antibiotic use among healthcare professionals using an ECDC questionnaire administered to 400 respondents, including 2474 qualified pharmacists, physicians, and nurses in a hospital setting. The results indicated high awareness (97.8%) of antibiotic resistance, but only 77.2% felt adequately knowledgeable. There were notable variances among doctors (91.3%), nurses (71.5%), and pharmacists (63.0%). Regarding access to resources and training, 72.2% reported ease in obtaining infection control guidelines, influencing 64.2% of respondents' perceptions of inappropriate antibiotic prescribing practices, leading to alterations in their approaches by 55.0%. Although 92.8% acknowledged the link between their actions and antibiotic resistance development, only 65.0% felt actively involved in its control. These findings underscore the need for targeted interventions to address knowledge gaps and enhance engagement among healthcare professionals in antibiotic stewardship efforts.

Lagadinou et al. (2023) conducted a study in Western Greece to evaluate the KAP of healthcare workers regarding antibiotic use and antimicrobial resistance. This observational study involved healthcare professionals from two primary tertiary hospitals, with 200 respondents out of 520 invited to participate. A significant portion prescribed antibiotics based on experience (32.5%) or diagnostic uncertainty (25%). Nearly all participants (97%) recognized

antimicrobial resistance as a major public health concern. However, only 32% agreed that adhering to international guidelines could help tackle antibiotic resistance. The study revealed significant gaps in understanding antimicrobial use, indicating a need for targeted educational initiatives and interventions. These findings emphasize the importance of raising awareness about proper antibiotic use and the threat of antibiotic resistance, highlighting the crucial role of healthcare workers in addressing these challenges.

2.2.3 Nurses' studies

The escalating threat of antibiotic resistance globally underscores the critical need for professional nurses to possess comprehensive knowledge and appropriate attitudes towards antibiotic use and AR (Salam et al., 2023). Several studies have examined the knowledge, attitudes, and practices (KAP) regarding antibiotic use and resistance among nursing professionals.

Rasha S. Abu Zeitoun's (2024) study addresses the pressing issue of antibiotic resistance (AR) by examining nurses' knowledge and practices regarding antibiotic use in the West Bank, a developing country context where AR poses significant health and economic challenges. Given the essential role nurses play in mitigating AR, the study aimed to assess their understanding and application of safe antibiotic practices, aligning with health-related sustainable development goals (SDGs). Using a descriptive cross-sectional design, the study recruited nurses from various hospitals via convenience sampling and collected data through a reliable, self-administered questionnaire. The findings revealed that nurses had only moderate knowledge of proper antibiotic use, and their actual practice of safe antibiotic usage was limited, underscoring the need for targeted education and training initiatives. Abu Zaitoun recommends that antibiotic stewardship and AR prevention programs be integrated into in-service training to strengthen nurses' competencies. These findings have important practical and theoretical implications, as they suggest that embedding appropriate antibiotic use principles in continuing education could effectively address knowledge gaps and support AR prevention. The study stands out as one of the few focused on nursing practices in antibiotic usage in the West Bank, offering foundational insights for developing effective training and stewardship programs to improve nursing practices in AR prevention.

AR is a pressing global health concern, and proper education on antibiotic use is essential for healthcare students. Bharti et al. (2024) conducted a study to assess the knowledge, attitudes, and practices (KAP) regarding AR among MBBS, BDS, and BSc Nursing students in northern India. The results showed that over 81% of students in all groups had a good understanding of AR, but there were differences in their antibiotic practices. For instance, 50% of BDS and 49.3% of BSc Nursing students chose antibiotics for treating sore throat and cold, compared to 33% of MBBS students. Despite most students being unwilling to prescribe antibiotics for family members, MBBS students were more likely to use leftover antibiotics than their peers. The study revealed that even after completing pharmacology courses, students had difficulties applying their AR knowledge in practical settings. This highlights the need for more focused training to ensure that future healthcare professionals are equipped to tackle AR effectively.

Sahu and Sahu (2024) conducted a study to assess the knowledge, attitudes, and practices (KAP) of nursing professionals in Chhattisgarh, India, regarding antibiotic use and resistance. The study involved 100 nursing staff and found that 27% had adequate knowledge of antibiotics, 50% had moderate knowledge, and 23% had inadequate knowledge. In terms of attitudes, 38% had a favorable attitude towards antibiotics, 61% had a moderate attitude, and 1% had an unfavorable attitude. Regarding antibiotic practices, 22% displayed good practices, 46% had moderate practices, and 32% had poor practices. The study also found a significant correlation between knowledge and practice, indicating that better knowledge was associated with more appropriate antibiotic use. These findings highlight the need for enhanced education and training for nursing professionals to improve their understanding and practices regarding antibiotics, which is crucial for combating antibiotic resistance.

The rise of AR highlights the critical need for Antimicrobial Stewardship Programs (ASPs) in healthcare to reduce treatment costs, hospital stays, and adverse health outcomes. ASPs depend on the collaboration of various healthcare professionals, including nurses. However, nurses' involvement in ASPs remains limited, influenced by factors like confidence, training, administrative support, and workload. A study by Mustafa et al. (2022) involving 583 nurses in Punjab, Pakistan, found that while nurses had a positive perception of ASPs, their direct participation was minimal. Barriers such as lack of knowledge, inadequate administrative support, and heavy workloads were identified. The study emphasizes the need for better training,

administrative backing, and workload management to enhance nurses' involvement in ASPs and improve responses to AR (Mustafa et al., 2022).

Jayaweerasingham et al (2019). assessed the KAP related to antibiotic use and resistance among 199 nursing students at a Government Nurses' Training School in Sri Lanka. Using a pre-validated questionnaire, the study revealed a mean knowledge score of 71.9%, indicating generally good knowledge levels among the participants. However, 40% of the students held significant misconceptions, such as the belief that antibiotics are effective in treating colds. The primary method identified for preventing antibiotic resistance was infection control. These findings highlight the necessity for targeted educational interventions to correct misconceptions and enhance understanding of antibiotic stewardship and infection control measures among nursing students.

Lalithabai et al (2022). highlights a significant knowledge gap among nurses regarding antibiotic resistance (AR), despite their critical role in infection control. Their study of 314 nurses found that while most recognized handwashing's role in infection prevention, few had a solid understanding of AR mechanisms. Only 26.4% showed strong knowledge about antibiotics, and just 17.3% had a good grasp of AR. However, 76.7% displayed positive attitudes toward antibiotic stewardship, suggesting a foundation for improvement. The study underscores the need for targeted education to bridge knowledge gaps and strengthen infection control efforts through informed nursing practices.

Teague et al (2023). examined the awareness and understanding of antibiotic use, AMR, and antimicrobial stewardship (AMS) among final-year nursing students across six universities in South Africa. The quantitative descriptive study, using an online questionnaire, revealed a significant deficiency in knowledge about antibiotic classes, their targeted organisms, and mechanisms of action. Only 15.3% of participants correctly identified that ceftazidime is not a fourth-generation cephalosporin, and merely 16.1% knew that clavulanic acid does not alleviate inflammation at the injection site. Additionally, a significant proportion of students did not recognize the role of broad-spectrum antibiotic prescribing (58.9%) and poor infection control practices (67.7%) in the rise of AMR. Alarming, the concept of AMS was poorly understood among the students. These findings highlight the urgent need for comprehensive education and training initiatives within nursing curricula to bolster AMS practices and combat the escalating

threat of AMR. The study calls for enhanced continuing professional development (CPD) activities in line with the National Action Plan (NAP) to effectively reduce AMR in South Africa.

2.2.4 Antibiotic Consumption and Resistance Patterns among patient in Palestine

Antibiotic resistance (AR) represents a significant and growing public health concern, exacerbated by the high consumption of antibiotics in healthcare settings (Ahmed et al., 2024). Several studies have highlighted the patterns of antibiotic use and the prevalence of multidrug-resistant organism (MDRO) in different clinical environments, underscoring the critical need for effective antibiotic stewardship programs (Kumar et al., 2024).

The study by Hattab et al. (2021) provides an in-depth look at antimicrobial consumption and resistance patterns in the intensive care units (ICUs) of a university teaching hospital in Nablus, Palestine. This observational, prospective cohort study monitored 100 patients in both medical and surgical ICUs from November 2019 to February 2020. The findings revealed significant antimicrobial usage, with vancomycin, piperacillin-tazobactam, and fluconazole being the most consumed in the surgical ICU, while meropenem, vancomycin, and levofloxacin were predominant in the medical ICU. Common pathogens identified included Coagulase-negative Staphylococci, *Escherichia coli*, and *Enterococcus faecalis*. Notably, there were significant occurrences of vancomycin-resistant *Enterococcus faecium* and methicillin-resistant *Staphylococcus aureus*. The study underscores the high resistance rates among key pathogens, particularly *A. baumannii* and *K. pneumoniae*, emphasizing the urgent need for robust antibiotic stewardship policies to manage and prevent antibiotic resistance effectively.

In a study by Arman et al. (2022), the focus was on the microbial profile and antimicrobial resistance patterns in infections among patients with hematologic malignancies. This retrospective analysis, conducted at An-Najah National University Hospital, examined data from January 2018 to December 2019, covering 144 isolates. Gram-negative bacteria (GNB) accounted for 45.8% of the isolates, gram-positive bacteria (GPB) for 39.6%, and fungi for 14.6%. The predominant GNB included *Pseudomonas aeruginosa* and *Escherichia coli*, while *Staphylococcus epidermidis* was the most frequent GPB. The study found high levels of resistance, particularly among GNB to ampicillin, ciprofloxacin, and imipenem, and among GPB to oxacillin and amikacin. MDROs were prevalent, with 51.5% of GNB and 68.4% of GPB exhibiting multidrug resistance, and a significant proportion showing difficult-to-treat resistance

(DTR). The findings emphasize the need for stringent antibiotic stewardship programs and infection control measures tailored to hospital-specific antibiograms.

Alsayed et al. (2022) conducted a cross-sectional descriptive study to investigate the knowledge, practices, and attitudes towards antibiotic use among healthcare professionals, medical students, and adults in the community in developing countries. The study, involving 10,226 participants, revealed significant gaps in knowledge and perceptions about antibiotic use. Among healthcare professionals, 72.4% had prescribed antibiotics in the past six months, while nearly half of medical students and community adults believed antibiotics were primarily for fever and effective against viral infections. A significant portion of respondents also held the misconception that antibiotics would always be effective for the same infection in the future. The study highlights the various factors contributing to antibiotic resistance, underscoring the need for comprehensive antibiotic stewardship programs aimed at educating all stakeholders to promote rational antibiotic use and mitigate the development of antibiotic resistance.

The reviewed studies consistently highlight significant gaps in knowledge, attitudes, and practices regarding antibiotic use among healthcare professionals, including physicians, pharmacists, medical students, and nurses, across various regions. These gaps underscore the urgent need for comprehensive educational interventions and stricter regulatory measures to enhance responsible antibiotic use and combat AR. Positive attitudes towards antibiotic stewardship are noted, but misconceptions and insufficient knowledge remain substantial barriers. Addressing these issues through targeted educational programs, enhanced curricula, and robust antibiotic stewardship initiatives is crucial to managing and preventing antibiotic resistance, thereby improving healthcare outcomes globally.

2.3 Conclusion

This review of the literature offers a thorough examination of diverse strategies implemented for the avoidance of antibiotic resistance (AR). Overall, the literature sets the groundwork for the subsequent chapters, underscoring the significance of a comprehensive and targeted approach to AR prevention across all healthcare team categories, including nurses, pharmacists, and doctors. All studies aimed to examine healthcare team knowledge, attitudes toward antibiotic use, and prevention strategies for AR.

Chapter Three: Methodology

3.1 Introduction

A quantitative, cross-sectional, observational study design was used to assess nurses' knowledge and attitudes toward antibiotic uses and prevention of antibiotic resistance in the medical and surgical departments at governmental and nongovernmental Hebron hospitals. this chapter also included definitions for the study population, design, and setting, as well as sample standards, data gathering procedures, and the strategy and outcomes for statistical analysis.

3.2 Research design

The study used a quantitative methodology with a descriptive, cross-sectional design. the quantitative approach allowed for systematic measurement and analysis of the data, providing an objective assessment of the variables involved. the descriptive design aimed to document the current state of antibiotic resistance prevention attitude, offering a detailed snapshot of the existing conditions without manipulating variables. the cross-sectional design involved collecting data from medical and surgical nurses at a single point in time to examine the relationships between different variables, such as knowledge and attitude. data were gathered through a self-administered electronic questionnaire and analyzed using descriptive statistics to identify trends and gaps in antibiotic resistance prevention knowledge and attitude. this design effectively captures the current practices and informs potential improvements in AR prevention strategies.

3.3 Study settings

The study is conducted at all Hebron hospitals (medical and surgical departments), as in the next table 1.

Table 3.1: Study setting and population

No	Hospital name/Location	Number of nurses		Number of departments (M S)	Type of hospital
		M	S		
1.	Al-Ahli Hospital – Hebron	27	24	1 /1	Non-Governmental
2.	Alia Hospital – Hebron	22	23	1 /1	Governmental

3.	Dura Hospital – Hebron	22	0	1 / 0	Governmental
4.	Al-Mizan Hospital – Hebron	19	19	1 / 1	Non-Governmental
5.	Yetta Hospital – Hebron	0	14	0 / 1	Governmental
6.	President Mahmoud Abbas Hospital – Hebron	11	0	1 / 0	Governmental
7.	PRCS – Hebron	0	10	0 / 1	Non-Governmental
Total	7 Hospitals	101	90	10 department	4 Gov /3non-Gov

3.4 Study population

Study population includes all 191 nurses who are distributed in medical and surgical departments in Hebron hospitals for both governmental and non-governmental(privet) include bachelorette nurse, diploma, MSN and their job title.

3.5 Study Sample

The study targeted all nurses who work in medical and surgical departments of the governmental & non-governmental Hebron hospitals in West Bank area with the total population sample (Census Sample). See table (1) in the previous page.

Using a formula for estimating a representative sample size (Cochran's formula):

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = sample size

N = population size (191in this case)

e = margin of error (a value you choose based on desired confidence level, typically between 0.03 and 0.05)

In the margin of error of 0.05 (5%), the formula would be:

n≈113

Therefore, 113 nurses have a representative sample with a margin of error of 5%

3.6 Inclusion and exclusion criteria

3.6.1 Inclusion Criteria:

All nurses working in both governmental and non-governmental hospitals in Hebron, in the medical and surgical departments

1.6.2 Exclusion Criteria:

Exclude the nurses' who had no experience in medical and surgical departments, nurses on annual or maternity leave, sick leave, and those who declined to participate.

3.7 Instrument of the study

Data was collected using a Google electronic questionnaire form after securing approval from the Ministry of Health and the Arab American University Ethical Boards. the questionnaire was designed in English and distributed to nurses for completion.

The study utilized an electronic google form questionnaire divided into three distinct sections, each designed to assess different aspects of medical and surgical nurses' knowledge and attitude toward antibiotic use and prevention of antibiotic resistance

The questionnaire will be composed of three parts, the first part aimed to assess the demographic data for whole participants, second part to test the knowledge test regarding antibiotic use and prevention of antibiotic resistance for medical and surgical department nurses. third part will be composed of tools to measure the nurses' attitudes toward AR prevention.

The questioner will be adopted from (Tembo et al., 2022) and (Diana S Lalithabai et al., 2022) studies. the tools of study will be attached with the proposal that were being taken from previous studies, it was Valid and Reliable.

The research questions will be assessed through statistical analysis, percentage, mean, frequencies, correlation, independent t-test, and regression.

The final questionnaire consisted of three parts:

- Part 1. Social demographics section: There were 13 questions about general information's as: age, marital status, gender, educational level, current work position, employment status, years of experience in medical and surgical departments, ever read an article about antibiotic or antibiotic resistance.
- Part 2. This section contains 26 questions used to assess the knowledge of medical and surgical department nurses toward antibiotic use and antibiotic resistance. The participants were asked to answer (✓) at their squire of choice according to what suits them. The answers options are Yes, No or I don't know.

The researcher differentiates between correct answer and wrong one by using the previous studies questionnaire.

- Part 3. Attitudes of medical and surgical department nurses toward antibiotic uses and antibiotic resistance. There are 21 questions that examined the participants' attitude. The answers varied from always, sometime and never.

The sum score of each outcome was assessed based on Bloom's cut off point (Bloom, 1956). Based on the sum scores, level of knowledge was classified into low level knowledge (less than 60%), moderate level knowledge (60-80%) and high-level knowledge (80-100%). Meanwhile, the scores were classified into positive attitude (80- 100%), neutral attitude (60%-80%) and negative attitude (less than 60%). (Bloom.1956).

3.8 Validity and Reliability

Questioner adopted from (Tembo et al., 2022) and (Diana S Lalithabai et al., 2022) studies. the tools of study attached with the proposal that were being taken from previous studies. also, internal consistency reliability using Cronbach's alpha coefficient was 0.87 for the knowledge part and 0.79 for the attitude part (Bloom. 1956).

3.9 Pilot Study

The author conducted a pilot study in medical and surgical department in Hebron hospital on a convenience sample of 20 nurses before starting the actual study. the pilot study sample were

distributed from 7 hospitals especially the nurses who work in medical and surgical department. The pilot study was intended to identify expected problems before the data collection procedure, and the appropriateness of the items in the questionnaire. this step helped me to evaluate and ensure the clarity of the questionnaire's words from the participants' viewpoint. their comments shown that the items were suitable, clear, comprehensive, not confusing and were easy to complete.

3.10 Data Collection Process and analysis

The data were collected from all governmental and non-governmental hospitals, especially from the nurses who work in intensive care departments. data were collected from 10, October 2024 to 20, December 2024. data collected from four gov & three non-gov hospitals, researcher met all nursing director and explain the process of data collection, questionnaire variables and the aim of the study. then questionnaire as electronic link was sent to the nursing directors who then disseminated it to medical and surgical head nurses to keep in contact between researcher and participants. researcher informed the nursing directors and head nurses to call him when they faced any problem or obstacle.

3.11 Statistical plan

To assess the significant differences between demographic characteristics related to general knowledge and attitude, the data were analyzed using the independent sample t-test and ANOVA techniques. the analysis was conducted using SPSS version 23.0. A significance level of $P < 0.05$ was employed to determine the statistical significance of the results.

Prior to performing the tests, the normality of the data was checked using the Shapiro-Wilk test to ensure the appropriateness of parametric testing. in cases where the assumption of normality was violated, non-parametric alternatives were considered. missing data were addressed by implementing appropriate imputation methods or by conducting a sensitivity analysis to evaluate their impact on the results. Additionally, Levene's test was used to assess the homogeneity of variances before applying the ANOVA technique. Also, Reliability test Cronbach's alpha performed for knowledge questions and the result was 0.853, and for practice questions Cronbach's alpha conducted and its results was 0.784 which indicates that questionnaire were internally consistent.

3.12 Ethical Consideration

Permission was obtained from the nursing faculty in the AAUP and Palestinian Ministry of Health (MOH) to conduct the study in medical and surgical department in Hebron hospital. then, the researcher obtained a verbal approval from the nursing director of each hospital. all participants' approval obtained verbally before the data collection process started. the participants informed that they have the right to participate or to withdraw from the study and to not answer any sensitive question. names are not required during participation in the study, the information obtained in this study is used only for research purposes and nobody can reach the information of any participant.

Chapter Four: Results

4.1 Introduction

The main goal of this study was to assess nurses' knowledge and attitudes regarding antibiotic usage and antibiotic resistance in both governmental and nongovernmental hospitals in Hebron. This chapter will illustrate the results and the correlation between sociodemographic characteristics and nurses' knowledge and attitude regarding antibiotic use and antibiotic resistance prevention.

Table 2 shows the characteristics of the study participants. The greater participation was from females as their percentages were 54.45%. Regarding age, 40.83% of nurses their age was between 26-30 years old, 28.27% were between 20-25 years. While 16.75% their ages were between 31-35 years, and only 14.13% of them their ages between 36-40. In terms of education, the majority of study sample were holding BA degree in Nursing and their percentage 39.79%. The greatest number of them work in non-governmental hospitals work 51.83%, the rest of them working in governmental hospitals in Hebron.

Table 4.1: Frequency of demographic characteristics.

Variables		Frequency	Percentage
Age	20-25	54	28.27%
	26-30	78	40.83%
	31-35	32	16.75%
	36-40	27	14.13%
Gender	Male	87	45.54%
	Female	104	54.45%
Education	Diploma	52	27.22%
	BA	76	39.79%
	Master	63	32.98%
Work place	Private	99	51.83%

	Governmental	92	48.2%
Number of years in medical and surgical Departments	1-5	57	29.84%
	6-10	83	43.45%
	11-15	51	26.70%
Is there is an Antibiotic use Protocol that is followed in your hospital	Yes	97	50.78%
	NO	94	49.21%
Did you ever read an article or guideline related to antibiotic use or resistance	Yes	79	41.36%
	No	112	58.63%
Did you participate in Workshops that related to antibiotic use or resistance?	Yes	83	43.45%
	No	108	56.54%

The next table illustrated the percentages of participated nurses' answers on knowledge section of the questionnaires, see table 3.

Table 4.2: Nurses' knowledge about antibiotics uses and prevention in governmental and non-governmental hospitals in Hebron. (N=191).

Knowledge Questions	Yes	%	No	%	I don't know	%
It is okay for someone to use antibiotics that were administered to a friend or family member, as long as they were used to treat the same illness	0	0%	191	100%	0	0%
Many infections are increasingly resistant to antibiotic treatment	167	87.43%	24	12.5%	0	0%
Infections caused by antibiotic-resistant bacteria are difficult or impossible to treat	98	51.30%	53	27.74%	20	10.47%
Antibiotic resistance is an issue in other countries but not in ours	44	23%	97	50.78%	30	15.70%

Bacteria that are resistant to antibiotics can be spread from person to person	100	52.35%	82	42.93%	9	4.71%
The risk of antimicrobial resistance increases in individuals that consume livestock that is treated with antimicrobials	91	47.64%	40	20.94%	60	31.41%
An antibiotic is a medication that kills or slows down the growth of bacteria.	191	100%	0	0%	0	0%
Antibiotics can have side effects, like allergic reactions and diarrhea.	116	60.73%	25	13.08%	50	26.17%
The common side effects of antibiotics are rash, nausea, vomiting, and diarrhea.	98	51.3%	40	20.94%	53	27.74%
The microorganism that can be killed by antibiotics is normal and infectious flora	132	69.10%	21	10.99%	38	19.89%
The effectiveness of antibiotics will be reduced if the full course is not completed.	191	100%	0	0%	0	0%
Nosocomial infection is the type of infection acquired in the health care setting.	180	94.24%	3	1.57%	8	4.18%
Antibiotic resistance is defined as bacteria changes in a way that reduces or eliminates the effectiveness of antibiotics.	129	67.53%	18	9.42%	44	23.03%
Developing new generations of antibiotics is not considered a cause of antibiotic resistance.	35	18.32%	111	58.11%	45	23.56%
Antibiotic resistance can affect any age group.	178	93.19%	10	5.23%	3	1.37%
Overuse of antibiotics is the most important factor leading to antibiotic resistance around the world	183	95.81%	0	0%	8	4.18%
Infections caused by antibiotic resistance are difficult and sometimes impossible to treat.	180	94.24%	11	5.75%	0	0%
Antibiotic resistance spread through animal and human	30	15.70%	45	23.56%	116	60.37%
Treating a viral infection with an antibiotic is an example of the improper use of antibiotic therapy.	191	100%	0	0%	0	0%
Effective handwashing is the most important procedure for the prevention of infection from microorganisms.	181	94.76%	10	5.23%	0	0%

The antibiotic stewardship program aims to improve the use of antibiotics and prevent antibiotic resistance	178	93.19%	0	0%	13	6.80%
Immunization and infection prevention is considered the most important factor in preventing antibiotic resistance.	187	97.90%	0	0%	4	2.09%
Antibiotic therapy should be started ideally when there is a positive microbiological result	181	94.76%	0	0%	10	5.23%
A patient expressing those antibiotics can be taken when symptoms are gone indicates a lack of knowledge	191	100%	0	0%	0	0%
Implementing infection prevention and control practices is the key action that a nurse should take to prevent resistant infections and their spread.	188	98.42%	0	0%	3	1.57%
Prospective audits, formulary restrictions, preauthorization and guidelines, and clinical pathways are considered antibiotic stewardship strategies to combat antibiotic resistance	85	44.50%	22	11.51%	84	43.97%

Table 4: demonstrates the overall knowledge of participated nurses regarding the antibiotic uses and resistance prevention in private and governmental hospitals in Hebron governance. The results revealed that the majority of nurses have a moderate knowledge.

Table 4.3: Total knowledge score regarding nurse's antibiotic use (N=191)

		Frequency	Valid Percent	Cumulative Percent
Valid	Good Knowledge	48	25.13%	25.13%
	Moderate Knowledge	124	64.92%	90.05%
	Poor Knowledge	19	9.94%	99.99%
	Total	191	100%	100%
Missing	System	0	0	0

The next table shows the nurses answers regarding the attitude questions regarding antibiotic use and resistance prevention.

Table 4.4: Nurses' attitudes about antibiotics use and prevention in governmental and non-governmental hospitals in Hebron. (N=191)

Attitude	Always	%	Sometime	%	Never	%
Antibiotic resistance is a major public health problem in our country	45	23.56%	121	63.3%	25	13.09%
The fact that one is taking an antibiotic increases the chances of developing resistance	69	36.12%	81	42.40%	41	21.46%
New antibiotic development can solve antibiotic resistance problems	90	47.12%	53	27.74%	48	25.13%
The use of antibiotics in livestock animals is an important cause of the appearance of new resistance to pathogenic agents in humans	87	45.54%	38	19.89%	66	34.55%
In all cases where antibiotics are dispensed, patients must be advised about complying with the treatment	88	46.07%	73	38.21%	30	15.70%
There is a need to establish a course on the 'rational use of antibiotics	86	45.8%	48	25.67%	77	37.65%
Antibiotics can be taken for the flu to get better quickly	50	26.17%	77	40.31%	64	33.50%
Antibiotics can be taken without a prescription	36	18.84%	48	25.13%	107	56.02%
Instructions are read and understood before taking antibiotics.	90	47.12%	52	27.22%	49	25.65%
Antibiotics can be kept in stock to be used whenever feeling sick.	109	57.06%	69	36.12%	13	6.80%
Participation in infection control activities helps in minimizing the spread of antimicrobial resistance	76	39.79%	96	50.26%	19	9.945
Reporting and escalating issues related to the misuse of antibiotics is the	99	51.83%	64	33.50%	28	14.65%

responsibility of a nurse.						
Advising patients to complete the prescribed antibiotic course even if they feel better quickly is necessary.	169	88.48%	22	11.51%	0	0%
Participation in special training on antibiotic resistance is recommended for all healthcare professionals.	170	89.0%	21	10.99%	0	0%
Advising other healthcare professionals in the appropriate use of antibiotics is important.	166	86.91%	25	13.08%	0	0%
Playing an active role in educating patients and families on the risk of antibiotic resistance is the responsibility of a nurse.	175	91.62%	34	17.80%	0	0%
Active contribution to institutional policies and guidelines which aim to control antibiotic resistance is the responsibility of a nurse	148	77.48%	43	22.51%	0	0%
Advocating the use of new generations of antibiotics that can fight diseases more effectively with caution.	86	45.02%	92	48.16%	13	6.80%
Recommending computer-based surveillance to facilitate good antibiotic stewardship is important.	80	41.88%	91	47.64%	20	10.47%
Advising incorporating active interventions along with education to prevent antibiotic resistance is necessary.	100	52.35%	68	35.60%	23	12.04%
Following clinical pathways in the management of infectious diseases is the responsibility of a nurse.	108	56.54%	72	37.69%	11	5.57%

Table 6 shows the finding of nurse’s overall attitudes, and the result reveal that the majority of the considers as a negative attitudes regarding usage of antibiotic and prevent it is resistance.

Table 4.5: Nurses attitudes scores related to antibiotic use and resistance prevention. (N=191)

		Frequency	Valid Percent	Cumulative Percent
Valid	Good Attitude	42	21.98%	21.98%
	Moderate Attitude	79	41.36%	63.34%
	Poor Attitude	70	36.64%	99.99%
	Total	191	100%	100%
Missing	System	0	0	0

Table 7 illustrates that there is a statistically significant correlation between nurses’ overall knowledge and overall attitude in antibiotic use and resistance prevention.

Table 4.6: Correlation Between Knowledge and Attitude.

		TOTAL_A	TOTAL_K
TOTAL_ A	Pearson Correlation	1	.237**
	Sig. (2-tailed)		.06
	N	131	131
TOTAL_K	Pearson Correlation	.237**	1
	Sig. (2-tailed)	.06	
	N	131	131
**. Correlation is significant at the 0.05 level (2-tailed).			

Table 8 demonstrates the correlation between overall knowledge scores of nurses and sociodemographic characteristics. The results showed that there is a statistically significant correlation at 0.05 level between years of experience, reading articles, participation in workshop, and presence of protocols about antibiotic use and resistance prevention and nurse’s knowledge and attitudes.

Table 4.7: Sociodemographic characteristic and their relation with knowledge and attitude. (N= 191)

sociodemographic characteristic		Mean	P value
Age group	20-25		.071
	26-30		.620
	31-35		.461
	36-40		0.319
Gender	Male	3.467±3.38	0.78
	Female	3.55±3.96	
Level of education	Diploma	BA	0.201
		Master	0.08
	BA	Diploma	0.701
		Master	0.067
Work Years	1-5 years	3.149±3.56	0.020
	5-10 years	2.23±3.13	0.001
	11-20 years	5.083±3.51	0.003
Work place	Governmental	3.860±2.953	0.41
	Private	2.631±3.818	
Read articles about antibiotic use and resistance	Yes	2.333±3.121	0.002
	No	4.25±3.73	
Is there is an Antibiotic use Protocol that is followed in your hospital	Yes	2.860±1.98	0.001
	No	3.60±2.11	
Did you participate in Workshops that related to antibiotic use or resistance?	Yes	4.31 ± 0.8	0.0041
	No	4.1 ± 0.8	

4.2 Summary

This chapter presents the results of the study on nurses' knowledge and attitudes regarding antibiotic use and antibiotic resistance in governmental and non-governmental hospitals in Hebron. The findings indicate that the majority of participants were female (54.45%) and aged between 26-30 years (40.83%). Most nurses held a BA degree (39.79%) and worked in non-governmental hospitals (51.83%).

The results on nurses' knowledge revealed that while a significant portion of nurses demonstrated a moderate understanding of antibiotic use and resistance prevention (64.92%), only 25.13% had good knowledge, and 9.94% had poor knowledge. Key knowledge gaps were identified, particularly in understanding the role of antimicrobial use in livestock and misconceptions about antibiotic resistance being limited to other countries. Regarding attitudes, the findings indicate a generally negative attitude toward antibiotic use and resistance prevention, with 36.64% of nurses showing a poor attitude and only 21.98% displaying a good attitude. While most nurses acknowledged antibiotic resistance as a public health concern, there were inconsistencies in their approach to antibiotic use, such as keeping antibiotics for future use or believing new antibiotics can fully solve resistance problems.

A statistically significant correlation was observed between nurses' overall knowledge and attitudes, highlighting the impact of knowledge on shaping perceptions of antibiotic resistance. Additionally, sociodemographic factors, including years of experience, reading articles, participation in workshops, and the presence of antibiotic use protocols, showed a significant relationship with knowledge and attitudes, emphasizing the role of continuous education and institutional support in improving antibiotic stewardship. Overall, the findings suggest a need for targeted educational interventions and hospital policies to enhance nurses' knowledge and attitudes toward responsible antibiotic use and resistance prevention.

Chapter Five: Discussion and Conclusion

5.1 Discussion

This study aimed to evaluate nurses' knowledge and attitudes regarding antibiotic use and the prevention of antibiotic resistance (AR) in both governmental and non-governmental hospitals in hebron. the results revealed several important insights related to the challenges of AR, which align with global and local trends.

The study found that most nurses (64.92%) had a moderate level of knowledge about antibiotics and their resistance prevention. this aligns with similar studies by Lalithabai et al. (2022), which also identified a moderate level of knowledge among nurses. However, this result differs from findings in other studies (Sanneh et al., 2020; Sadasivam et al., 2016; Jayaweerasingham et al., 2019), where nurses demonstrated a better understanding of antibiotic use. the moderate level of knowledge observed in this study could be attributed to the limited educational materials provided to nurses during their training, highlighting the need for improved and comprehensive educational resources about antibiotics in nursing education.

Concerning nurses' attitudes, the overall attitude was neutral, reflecting a lack of strong positive or negative views about antibiotic use and AR prevention. this finding aligns with the results of Sadasivam et al. (2016) and Lalithabai et al. (2022), who also reported that nurses had negative or indifferent attitudes towards antibiotic stewardship. however, Kistler et al. (2017) reported a more favorable, evidence-based attitude among nurses. this discrepancy suggests the importance of ongoing educational efforts to promote a positive attitude toward antibiotics and AR prevention.

Additionally, the study showed that nurses viewed antimicrobial stewardship programs (ASPs) positively, which is consistent with findings from research by Hayat et al. (2020). despite their favorable view of ASPs, many nurses still lacked knowledge about these programs. this reflects a broader issue of insufficient training, as indicated by the low participation in antibiotic-related workshops. Abera et al. (2014) also found that most nurses desired more opportunities for training on antibiotics. these results emphasize the need for regular, structured workshops focused on antibiotics and AR prevention.

The study also explored the influence of sociodemographic factors on nurses' knowledge and attitudes. a significant association was found between years of experience and nurses' knowledge

and attitudes, which supports previous studies by Lalithabai et al. (2022) and Hayat et al. (2020). This suggests that the accumulation of practical experience over time may enhance nurses' understanding and approach to commonly used antibiotics. Furthermore, the study found that reading articles and attending training related to antibiotics were associated with better knowledge and attitudes, though this result differed from Lalithabai et al. (2022), who found no such correlation. These differences could be due to variations in training programs and available resources.

Regarding educational level, nurses with a master's degree demonstrated higher levels of knowledge and more positive attitudes compared to those with a bachelor's degree or diploma. This finding supports the work of Lalithabai et al. (2022), and it can be explained by the more rigorous academic and research demands of master's degree programs, which likely lead to increased awareness and understanding of global health issues like AR.

An interesting aspect of the study was the lack of correlation between nurses' knowledge and their attitudes. Nurses with moderate knowledge levels also had moderate attitudes, suggesting that improving knowledge alone may not be enough to change attitudes or behaviors. This highlights the importance of not only educating nurses about antibiotics but also instilling a mindset that values responsible antibiotic use and AR prevention.

This study underscores the critical role that nurses play in the global battle against AR, a growing public health challenge. Nurses are at the forefront of combating AR through effective antibiotic management, patient education, and infection prevention practices. Previous research (Auta et al., 2019; Nair et al., 2019; Barchitta et al., 2021) has identified gaps in nurses' knowledge and practices, which contribute to the persistence of AR. The findings of this study align with those of Jabbarin et al. (2023), Al-Halawa et al. (2023), and Abuawad et al. (2024), who reported similar gaps in healthcare workers' knowledge and practices in Palestine.

Demographically, the study found that most nurses were female (54.45%), aged 26-30 years (40.83%), and had a bachelor's degree (39.79%). More nurses were employed in non-governmental hospitals (51.83%). These trends are consistent with previous research, but this study adds a new perspective by highlighting how differences between governmental and non-governmental hospitals may influence nurses' knowledge and attitudes. It is important to consider these factors when designing interventions to address AR.

5.2 Conclusion

This study underscores the urgent need for comprehensive educational initiatives to address the gaps in nurses' understanding and attitudes towards antibiotic use and the prevention of antibiotic resistance (AR). The results highlight the necessity of incorporating AR prevention into both nursing education and hospital protocols, ensuring that nurses are well-equipped to handle antibiotics responsibly. Since nurses play a key role in combating AR, it is vital to invest in continuous education and training to enhance healthcare outcomes worldwide. The study also reveals that many nurses are not fully aware of the core concepts related to antibiotics and AR, stressing the importance of implementing thorough, well-structured educational programs in healthcare settings to promote the appropriate use of antibiotics and AR prevention strategies.

5.3 Recommendations

1. Regular, comprehensive educational programs on antibiotic use and the prevention of antibiotic resistance (AR) should be systematically implemented for nursing staff at all professional levels, incorporating the most current evidence-based antimicrobial stewardship practices to enhance knowledge and promote effective AR prevention strategies.
2. Efforts should be made to foster positive attitudes toward AR prevention through targeted awareness campaigns, alongside continuous professional development and training initiatives.
3. Increased participation in antibiotic stewardship programs (ASPs) should be encouraged, with additional training opportunities offered to nurses with lower educational levels or less clinical experience to enhance their understanding and engagement.
4. Collaboration between governmental and non-governmental hospitals should be promoted to facilitate the exchange of resources, knowledge, and best practices for effective AR management.
5. Regular assessments of nurses' knowledge and attitudes towards antibiotics and AR prevention should be conducted, with the feedback used to inform and refine ongoing educational strategies and interventions.

5.4 Limitations:

1. Difficulty in including all of hospitals in West Bank due to occupational boundaries.
2. Electronic form of questionnaire used in the study.

3. As the study conducted only in hospitals in one city this limit the results generalizability.

5.5 Study implication:

According to this study, nurses must become more knowledgeable and possess the proper mindset in order to participate in antimicrobial stewardship initiatives and effectively contribute to measures for preventing antibiotic resistance. In its research context, the study offers baseline data that can help in the future to create a program that can improve nurses' attitudes and expertise.

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Appendices

Appendix 1: Research Tool

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



Adult Nursing Master Program

Dear Nursing colleagues,

The researcher is preparing a study to explore and evaluate the extent of Nurses Knowledge and Attitudes toward Antibiotic use and Prevention of Antibiotic Resistance in the medical and surgical departments at governmental and nongovernmental Hebron hospitals.

This questionnaire was prepared as part of a study to obtain a master's degree in emergency nursing, and you have been selected to be part of the study sample.

Therefore, we put in your hands this questionnaire, hoping to assist by answering the paragraphs of the questionnaire accurately and objectively because it has a great impact on obtaining accurate results. Note that everything that is contained in your answers will be respected, will be treated with complete confidentiality, and will only be used for scientific research purposes. Therefore, there is no need to write the name or any information indicating your honorable person.

You will need approximately 13 minutes to complete this questionnaire. Please read the questions and choose what suits you, using an (X) or (√) in the appropriate place.

The research team is ready to provide you with the results of this study if requested

Many thanks for your cooperation

For more inquiries, you can call: 0568851561

Whatsapp:0595308505

Or write an E-Mail to: mohamad.sh.dagameen@icloud.com

Researcher: mohammad dagameen

Supervision Dr. Imad Fashafsheh

Part One: Socio-Demographic and Professional Data:

Please read the questions and mark your answer with an (X) or (√) in the appropriate place:

1. Age in Years: 20-25 26-30 31-35 36-40 41-45 more than 46
2. Gender: Male Female
3. Marital status: Single Married other
4. Educational Level: Practical Nurse Bachelorette Nurse
 Specialized High Diploma Master Ph.D. other
5. Your Position: Practical Nurse Registered Nurse Assistance head Nurse
 Head Nurse
6. Employment status: Full-Time Part-Time Other
7. Number of years in Nursing: Year.
8. Number of years in medical Department: Year.
9. Number of years in surgical Department: Year.
10. Is there a Continuous Learning Committee in your Hospital: Yes No
11. Please choose in which hospital you work.
Governmental hospitals: Dura Yatta Alia Halhoul
Non-Governmental Hospitals: Ahli Almizan alhilar
12. Is there an antibiotic use Protocol that is followed in your hospital?
 Yes No
13. Did you ever read an article or guideline related to antibiotic use or resistance?
 Yes No
14. Did you participate in Workshops that related to antibiotic use or resistance?
 Yes No

Part Two: The phrases in the following table aim to check your knowledge nursing about antibiotic use and resistance, so please answer the following questions using the (X) or (/) in the place that suits you:

Q.N.	Knowledge Questions	Yes	No	I don't know
1.	It is okay for someone to use antibiotics that were administered to a friend or family member, as long as they were used to treat the same illness			
2.	Many infections are increasingly resistant to antibiotic treatment			
3.	Infections caused by antibiotic-resistant bacteria are difficult or impossible to treat			
4.	Antibiotic resistance is an issue in other countries but not in ours			
5.	Bacteria that are resistant to antibiotics can be spread from person to person			
6.	The risk of antimicrobial resistance increases in individuals that consume livestock that is treated with antimicrobials			
7.	An antibiotic is a medication that kills or slows down the growth of bacteria.			
8.	Antibiotics can have side effects, like allergic reactions and diarrhea.			
9.	The common side effects of antibiotics are rash, nausea, vomiting, and diarrhea.			
10.	The microorganism that can be killed by antibiotics is normal and infectious flora			
11.	The effectiveness of antibiotics will be reduced if the full course is not completed.			
12.	Nosocomial infection is the type of infection acquired in the health care setting.			
13.	Antibiotic resistance is defined as bacteria changes in a way that reduces or eliminates the effectiveness of antibiotics.			
14.	Developing new generations of antibiotics is not considered a cause of antibiotic resistance.			
15.	Antibiotic resistance can affect any age group.			
16.	Overuse of antibiotics is the most important factor leading to antibiotic resistance around the world			
17.	Infections caused by antibiotic resistance are difficult and sometimes impossible to treat.			
18.	Antibiotic resistance spread through animal and human			

19.	Treating a viral infection with an antibiotic is an example of the improper use of antibiotic therapy.			
20.	Effective handwashing is the most important procedure for the prevention of infection from microorganisms.			
21.	The antibiotic stewardship program aims to improve the use of antibiotics and prevent antibiotic resistance			
22.	Immunization and infection prevention is considered the most important factor in preventing antibiotic resistance.			
23.	Antibiotic therapy should be started ideally when there is a positive microbiological result			
24.	A patient expressing that antibiotics can be taken when symptoms are gone indicates a lack of knowledge			
25.	Implementing infection prevention and control practices is the key action that a nurse should take to prevent resistant infections and their spread.			
26.	Prospective audits, formulary restrictions, preauthorization and guidelines, and clinical pathways are considered antibiotic stewardship strategies to combat antibiotic resistance.			

Part Three: The phrases in the following table aim to explore the nursing attitude about antibiotic use and resistance, so please answer the following questions using the (X) or (/) mark in the place that suits you:

Q.N.	Attitude	Always	Sometime	Never
1.	Antibiotic resistance is a major public health problem in our country			
2.	The fact that one is taking an antibiotic increases the chances of developing resistance			
3.	New antibiotic development can solve antibiotic resistance problems			
4.	The use of antibiotics in livestock animals is an important cause of the appearance of new resistance to pathogenic agents in humans			
5.	In all cases where antibiotics are dispensed, patients must be advised about complying with the treatment			
6.	There is a need to establish a course on the 'rational use of antibiotics			
7.	Antibiotics can be taken for the flu to get better quickly			
8.	Antibiotics can be taken without a prescription			
9.	Instructions are read and understood before taking antibiotics.			

10.	Antibiotics can be kept in stock to be used whenever feeling sick.			
11.	Participation in infection control activities helps in minimizing the spread of antimicrobial resistance			
12.	Reporting and escalating issues related to the misuse of antibiotics is the responsibility of a nurse.			
13.	Advising patients to complete the prescribed antibiotic course even if they feel better quickly is necessary.			
14.	Participation in special training on antibiotic resistance is recommended for all healthcare professionals.			
15.	Advising other healthcare professionals in the appropriate use of antibiotics is important.			
16.	Playing an active role in educating patients and families on the risk of antibiotic resistance is the responsibility of a nurse.			
17.	Active contribution to institutional policies and guidelines which aim to control antibiotic resistance is the responsibility of a nurse			
18.	Advocating the use of new generations of antibiotics that can fight diseases more effectively with caution.			
19.	Recommending computer-based surveillance to facilitate good antibiotic stewardship is important.			
20.	Advising incorporating active interventions along with education to prevent antibiotic resistance is necessary.			
21.	Following clinical pathways in the management of infectious diseases is the responsibility of a nurse.			

Appendix 2: IRP Approval

Arab American University
Institutional Review Board - Ramallah



الجامعة العربية الأمريكية
مجلس أخلاقيات البحث العلمي - رام الله

IRB Approval Letter

Study Title: "Nurses Knowledge and Attitudes Toward Antibiotic Use and Prevention of Antibiotic Resistance in the Medical and Surgical Departments at Governmental and Nongovernmental Hebron Hospitals".

Submitted by: Mohamad Shoaib Dagameen

Date received: 23th May 2024

Date reviewed: 26th May 2024

Date approved: 26th May 2024

Your Study titled "Nurses Knowledge and Attitudes Toward Antibiotic Use and Prevention of Antibiotic Resistance in the Medical and Surgical Departments at Governmental and Nongovernmental Hebron Hospitals" with the code number "R-2024/A/86/N" was reviewed by the Arab American University Institutional Review Board - Ramallah and it was approved on the 26th of May 2024.

Sajed Ghawadra, PhD
IRB-R Chairman
Arab American University of Palestine



General Conditions:

1. Valid for 6 months from the date of approval.
2. It is important to inform the IRB-R with any modification of the approved study protocol.
3. The Board appreciates a copy of the research when accomplished.

رام الله - فلسطين

Tel: 02-294-1999

E-Mail: IRB-R@aaup.edu

Website: www.aaup.edu

Appendix 3: Hospital Approval "Non-GOV"

Arab American University
Faculty of Graduate Studies



الجامعة العربية الأمريكية
كلية الدراسات العليا

2024/6/10

الى من يهمله الامر

تسهيل مهمة بحثية

تحية طيبة وبعد،

تهديكم كلية الدراسات العليا في الجامعة العربية الأمريكية أطيب التحيات، وبالإشارة الى الموضوع أعلاه، تشهد كلية الدراسات العليا في الجامعة العليا أن الطالب محمد شعيب راعب دغامين والذي يحمل الرقم الجامعي 202113213 هو طالب ماجستير في برنامج تمريض البالغين ويعمل على رسالة الماجستير الخاصة به بعنوان:

" معرفة الممرضين وتوجههم فيما يتعلق باستخدام المضادات الحيوية والوقاية من مقاومة المضادات الحيوية في الأقسام الطبية والجراحية في مستشفيات الخليل الحكومية وغير الحكومية"، تحت إشراف الدكتور عماد فشافشه. نأمل من حضرتكم الإيعاز لمن يلزم لمساعدته للحصول على المعلومات اللازمة للدراسة، علماً أن المعلومات ستستخدم لغاية البحث فقط وسيتم التعامل معها بغاية السرية، وقد أعطي هذه الرسالة بناءً على طلبه.

وتفضلوا بقبول فائق الاحترام

ق.أ. عميد كلية الدراسات العليا

د. حسين الاحمد



Page 1 of 1

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Appendix 4: Hospital Approval" GOV"

State of Palestine
Ministry of Health
Education in Health and Scientific
Research Unit



دولة فلسطين
وزارة الصحة
وحدة التعليم الصحي
والبحث العلمي

Ref.:
Date:.....

الرقم: ٢٠٢٤/١٠٠٠٠٠٠٠
التاريخ: ٢٠٢٤/١٠/٠٤

عطوفة الوكيل المساعد لشؤون المستشفيات والطوارئ المحترم،،،
تحية واحترام،،،

الموضوع: تسهيل مهمة بحث

يرجى تسهيل مهمة الطالب: محمد شعيب راغب دغامين برنامج ترميض البالغين الجامعة العربية
الامريكية، في عمل بحث بعنوان:
" معرفة الممرضين وتوجههم فيما يتعلق باستخدام المضادات الحيوية والوقاية من مقاومة المضادات
الحيوية في الأقسام الطبية والجراحية في مستشفيات الخليل الحكومية وغير الحكومية "
تحت اشراف د. عماد فشافشة حيث سيتم جمع معلومات من خلال توزيع استبانة وذلك في :
- مستشفى عاليه - مستشفى دورا - مستشفى يطا - مستشفى حلحول
على ان يتم الالتزام باساليب واخلاقيات البحث العلمي، وعدم التعرض للمعلومات التعريفية للمشاركين.
على ان يتم تزويد الوزارة بنسخة PDF من نتائج البحث، والتعهد بعدم النشر لحين الحصول على موافقة
الوزارة على نتائج البحث.

مع الاحترام،،،

د. عبد الله القواسمي
رئيس وحدة التعليم الصحي والبحث العلمي

نسخة: عميد كلية الدراسات العليا المحترم/ الجامعة العربية الامريكية

Telfax.:09-2333901

scientificresearch.dep@gmail.com

تلفاكس: 09-2333901

Appendix 5: Participants Consent form

INFORMED CONSENT

AAUP-IRB-R Code No.:

AAUP-IRB-R Date:

I, (*Name of Participant / optional*) hereby agree to take part in the clinical research (clinical study/questionnaire study/drug trial) specified below:

Title of Study: Nurses Knowledge and Attitudes toward Antibiotic use and Prevention of Antibiotic Resistance in the medical and surgical departments at governmental and nongovernmental Hebron hospitals.

Fulfillment of master degree, in adult nursing (medical-surgical) in AAUP.
(Name of program)

The nature and purpose of which has been explained to me by Mohamad Dagameen, and interpreted by Mohamad Dagameen to the best of his/her ability in English.

I have been told about the nature of the research in terms of methodology, possible adverse effects and complications (as per Participant Information Sheet).
After knowing and understanding all the possible advantages and disadvantages of this research, I voluntarily consent of my own free will to participate in the clinical research specified above.
I understand that I can withdraw from this research at any time without assigning any reason whatsoever.

Date:

Signature:
(Participant)

IN THE PRESENCE OF:

Name:

Designation: **Signature:**

(Witness for Signature of Participant)

I confirm that I have explained to the participant the nature and purpose of the above-mentioned research.

Date:

Signature: Mohamad Dagameen

(Attending investigator)

معرفة المرضين وتوجههم فيما يتعلق باستخدام المضادات الحيوية والوقاية من مقاومة المضادات الحيوية في الأقسام الطبية والجراحية في مستشفيات الخليل الحكومية وغير الحكومية.

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ملخص

الحيوية - قضية صحية عامة معقدة ومكلفة (FDA) ، 2023 . (تستخدم المضادات الحيوية لعلاج الالتهابات البكتيرية من خلال تثبيط نمو البكتيريا أو القضاء عليها. تنشأ مقاومة المضادات الحيوية عندما تتكيف البكتيريا ولا تعود تستجيب لهذه الأدوية (WHO) ، 2020 .) وقد تم تصنيف هذه الظاهرة كإحدى القضايا الصحية العامة على المستوى العالمي.

الهدف: هدفت هذه الدراسة إلى تقييم معرفة المرضين ومواقفهم تجاه استخدام المضادات الحيوية والوقاية من مقاومة المضادات الحيوية في أقسام الباطني والجراحة بالمستشفيات الحكومية وغير الحكومية في محافظة الخليل.

الطريقة: دراسة مقطعية كمية ملاحظة شملت 191 ممرضًا/ممرضة مسجلين من المستشفيات الخاصة والحكومية في الضفة الغربية. تم استخدام استبيان ورقي مجهول الهوية مستند إلى الأدبيات السابقة. تم جمع البيانات باستخدام استبيان إلكتروني مجهول الهوية عبر نموذج جوجل.

النتائج: أظهرت النتائج أن المرضين لديهم معرفة معتدلة بشأن استخدام المضادات الحيوية وسبل الوقاية من المقاومة؛ ومع ذلك، كانت مواقفهم سلبية إلى حد كبير، مما يبرز الحاجة الملحة للتحسين. تم ملاحظة علاقات ذات دلالة إحصائية بين معرفة المرضين ومواقفهم والعوامل الاجتماعية والديموغرافية، بما في ذلك سنوات الخبرة، التفاعل مع الأدبيات المهنية، المشاركة في ورش العمل، والبروتوكولات المؤسسية ($p < 0.05$) كانت الغالبية العظمى من المشاركين من الإناث (54.45%)، تتراوح أعمارهم بين 26-30 عامًا

(40.83%)، يحملون درجة بكالوريوس في التمريض (39.79%)، ويعملون في المستشفيات غير الحكومية (51.83%). تؤكد هذه النتائج الحاجة إلى تدخلات تعليمية مستهدفة وسياسات مؤسسية لتحسين كفاءات الممرضين في مكافحة مقاومة المضادات الحيوية.

الخلاصة: وفقًا للدراسة الحالية، فإن الممرضين ليسوا على دراية تامة بأساسيات المضادات الحيوية، مقاومة المضادات الحيوية والتقنيات التي يجب استخدامها للوقاية منها. وهذا يبرز أهمية إنشاء برنامج تعليمي شامل وواسع النطاق للكوادر الصحية في جميع المستشفيات حول الاستخدام السليم للمضادات الحيوية.

الكلمات المفتاحية: المعرفة، المواقف، الممرضين، المضادات الحيوية، المقاومة