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Assessment of nurses knowledge about antibiotic side effect in Hilla teaching hospitals

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Dedication:

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Chapter one : Introduction

Patient safety is a critical global concern and a significant challenge faced by healthcare systems today (Bernier, 2017). Medication administration (MA) in acute-care settings stands out as a crucial aspect of patient safety and has been subject to extensive scrutiny and research due to its direct impact on patient morbidity and mortality (Bae and Park, 2011).

Secure handling of professional and ethical medication administration transcends the technical aspect; it requires awareness, experience, and judgment in nursing.

The efforts of many individuals and effective services culminate in safe and productive medication practices. Ensuring safe medication administration entails awareness of medication safety, understanding medication systems, and adhering to best practices to prevent medication administration errors(Kunyk, 2015).

Nurses play a central role in medication administration, necessitating a specific set of skills and mindset. Medication errors can jeopardize nursing practice and pose preventable risks to patients. Nurses are entrusted with patient care and safety, thus emphasizing their responsibility in medication administration and error prevention (Abusaad and Etawy, 2015).

In the contemporary era, various types of medicines are available, with antibiotics being among the most widely used. Antibiotics are chemical compounds that kill or inhibit bacteria, crucial for treating bacterial diseases. The discovery of antibiotics, exemplified by Penicillin in 1928,

marked a significant milestone, with modern production methods employing chemical synthesis since 1939.

Antibiotics are ineffective against viral infections(Hudzicki, 2009) .They are administered orally, intravenously, or intramuscularly, with intravenous administration posing potential complications and resource demands (Jin et al., 2015).

Drug side effects are unintended and undesired effects of medications used for prevention, diagnosis, or treatment of diseases. Given the proliferation of medications, drug reactions are common and present challenges in clinical practice and drug development (Duong et al., 2017, Gupta et al., 2014)

Antimicrobial side effects encompass adverse drug reactions affecting one or more organ systems. While most antibiotics boast a good safety profile, some may lead to life-threatening side effects. Healthcare teams should be well-versed in the side-effect profiles of antibiotics, considering both frequency and severity when selecting agents for therapy(Cunha, 2001) .

Medication administration in healthcare prioritizes patient safety, integral to the healthcare delivery system(Sabry and Abbassi, 2014).Drug side effects can significantly impact patient safety in hospitals(Zirpe et al., 2020).

Antibiotics represent a cornerstone in treating bacterial infections. Coined in 1942, the term "antibiotic" denotes substances produced by microorganisms antagonistic to other microorganisms. Adverse drug reactions rank among the leading causes of death globally, underlining their impact on healthcare delivery and drug development(Hacker et al., 2009).

While antibiotics undergo screening for negative effects before clinical approval, some may still exhibit adverse side effects, ranging from mild

to severe, contingent on antibiotic type, targeted microbes, and individual patient factors(Slama et al., 2002, Kumar et al., 2012) .

Statement of the Study

Assessment of Nurses' Knowledge about Antibiotic Side Effects in Hilla teaching hospitals

Objective of the Study

The study aims to:

1. Describe nurses' knowledge regarding the side effects of antibiotics.
2. Identify relationships between nurses' knowledge and their demographic characteristics.

Definition of Terms

Nurse

Theoretical Definition: "A nurse is a healthcare provider responsible for delivering care to clients and patients based on ethical principles" (Jones and Johnstone, 2019).

Operational Definition: Individuals working at Hilla Teaching Hospital with varying educational backgrounds.

Knowledge

Theoretical Definition: "Awareness or familiarity gained through experience of facts, situations, or education" (Boudreau et al., 2011).

Operational Definition: Facts and information related to antibiotic side effects.

Antibiotics

Theoretical Definition: "Chemical compounds that kill bacteria or inhibit their growth"(Hudzicki, 2009).

Operational Definition: Medications used at Hilla Teaching Hospital to combat bacterial infections.

Chapter 2: Antibiotic Overview

Historical Background

Before the 20th century, infections were primarily treated with medicinal folklore remedies. Evidence of antimicrobial properties dates back over 2,000 years, with ancient civilizations like the Egyptians and Greeks utilizing specially selected mold and plant materials for infection treatment. Remarkably, Nubian mummies examined in the 1990s showed significant levels of tetracycline, indicating early antibiotic use. The dawn of modern antibiotic medicine emerged with the discovery of synthetic antibiotics derived from dyes.

Antibiotic Production and Delivery

The journey from antibiotic production to effective delivery involves crucial modifications. Post-production alterations optimize antibiotic efficacy, such as aerosolization to target lung infections directly. This method bypasses potential damage to non-infected body areas. Moreover, in the realm of implantable medical devices, antibiotics are integrated to prevent bacterial colonization and subsequent infections. For instance, antibiotics are added to the surfaces of medical implants, offering an additional layer of defense against microbial invasion. Practical considerations in antibiotic delivery methods include injection, requiring meticulous pre-mixing with suitable solutions to ensure safe administration.

Uses and Action of Antibiotics

Antibiotics serve a broad spectrum of applications in healthcare, encompassing treatment for various gram-positive or gram-negative bacterial infections. Beyond therapeutic uses, antibiotics play roles in suppressing intestinal flora pre-surgery, controlling acne, and prophylactic administration in high-risk scenarios to prevent bacterial

infections. Classification of antibiotics is often based on their antimicrobial spectrum and mechanism of action, enabling tailored treatment strategies.

Nurse's Responsibility in Medication Administration

Nurses play a pivotal role in ensuring safe and effective medication administration practices. From verifying medication orders for clarity and accuracy to assessing appropriateness for individual patients, nurses are instrumental in preventing medication errors and adverse events. Comprehensive knowledge of medications, adherence to established protocols, and effective communication with interdisciplinary teams are essential elements of nursing practice in medication management.

The Ten Drug Rights

In medication administration, nurses adhere to the "Ten Rights" to ensure patient safety. These include:

1. Right patient: Ensuring the medication is administered to the correct patient.
2. Right medication: Administering the correct medication as prescribed.
3. Right dose: Providing the prescribed dosage accurately.
4. Right route: Ensuring the medication is administered via the correct route (e.g., oral, intravenous).
5. Right time: Administering the medication at the prescribed time intervals.
6. Right documentation: Maintaining accurate records of medication administration.

7. Right reason: Administering the medication for the appropriate indication.
8. Right assessment: Conducting thorough patient assessments before medication administration.
9. Right education: Providing patients with appropriate education regarding their medications.
10. Right to refuse: Respecting the patient's right to refuse medication and addressing any concerns or questions they may have.

Medication Error Reporting

The effective reporting of medication errors is paramount in identifying system vulnerabilities and implementing corrective measures. Despite the importance of error reporting systems, underreporting remains a persistent challenge in healthcare settings. Enhancing reporting mechanisms, fostering a culture of safety, and promoting transparency are critical steps toward improving patient outcomes and minimizing the occurrence of medication errors.

Chapter 3: Methodology

This chapter outlines the methodology employed in the study, including the study design, administrative arrangements, sample selection, criteria for inclusion and exclusion, instrument construction, pilot study for questionnaire reliability and validity, data collection, data analysis (both descriptive and inferential statistical analyses), and limitations of the study.

3.1. Design of Study:

A cross-sectional study design was adopted to assess Nurses' Knowledge about antibiotic side effects in teaching hospitals in Hilla city. The study was conducted from February 2024 to April 2024.

3.2. Administrative Arrangements:

Permission was obtained from department of community medicine Babylon university & from Babil health directorate.

3.3. Ethical Considerations:

Participants were fully informed about the study and its objectives, and voluntary verbal consent was obtained prior to their participation.

3.4. Setting and Sample of the Study:

The study was carried out at teaching hospitals in Hilla city, with a sample size of 100 nurses participating in the study. We consulted our community medicine teacher on the minimum sample size appropriate for this study and he advised that the sample needs to be at minimum 80 participants, so after careful consideration we decided to go with a sample of 100 to meet the minimum sample size required and make the calculation and conversions to percentages easier.

3.5. Construction of the Instrument:

The study instrument consisted of two parts:

1. Validity of the Questionnaire: Validity refers to the extent to which an instrument corresponds to its intended purpose. The questionnaire was presented to experts from various specialties to ensure content clarity, relevance, and adequacy. Their feedback was incorporated to enhance the questionnaire's validity.

3.6. Pilot Study:

Prior to the main study, a pilot study was conducted to assess the reliability and validity of the questionnaire.

3.7. Data Collection:

Data collection occurred from March 1st, 2024, to March 10th, 2024. Nurses and healthcare providers completed the questionnaire as a self-report. We printed the questionnaire on paper and handed it to participants to fill out. Participants received necessary information and instructions from the researcher to fill out the questionnaire accurately.

3.8. Data Analysis:

Data analysis was performed using Microsoft Excel. The following statistical methods were employed:

A. Descriptive Data Analysis Approach: Descriptive procedures were used to characterize study variables. Each domain was categorized into three levels based on cutoff points for frequency, percentages, and statistical tables.

B. Inferential Statistical Data Analysis Approach: The Chi-square test was utilized to determine the relationship between nurses' sociodemographic characteristics and their knowledge about antibiotic side effects.

3.9. Limitations of the Study:

It's important to acknowledge potential limitations of the study, such as sample size constraints, self-reporting biases, and constraints inherent to the study design.

Chapter Four: Result of the study

This chapter presents the descriptive analysis of the sample related to Demographic Characteristics of the Study Sample, Assessment of nurses knowledge about side effects of antibiotics drugs, and to find association between demographic characteristics knowledge of nurses about side effects of antibiotics drugs.

Table (4-1). Distribution of Demographic Characteristics of the Study Sample (n= 100)

Variable		F		%	
Gender	Male	58		58%	
	Female	42		42%	
		Total	100	Total	100%
Level of education	School middle Nursing	18		18%	
	Nursing Institute	34		34%	
	Nursing College	46		46%	
	Others	2		2%	
		Total	100	Total	100%
Years of experience	< 5 Years	55		55%	
	5 - <10 Years	20		20%	
	10 - < 15 Years	1		1%	
	15 - < 20 Years	5		5%	
	> 20 Years	19		19%	
		Total	100	Total	100%
Age	20 - < 30 Years	70		70%	
	30 - < 40 Years	10		10%	
	40 - < 50 Years	4		4%	
	> 50 years	16		16%	
		Total	100	Total	100%

Did you Participate in courses related to antibiotic ?	Yes	39	39%	
	NO	61	61%	
		Total	100	Total

The data presented in the table indicates that 58% of the participants were male, while 42% were female.

In terms of the level of education, the majority of participants, constituting 46%, were from Nursing College, followed by 34% from Nursing Institutes, 18% from Nursing Schools, and 2% from other educational backgrounds.

Regarding years of experience, 55% of participants had less than 5 years of experience, followed by 19% with more than 20 years of experience, 20% with 5 to less than 10 years of experience, 5% with 15 to less than 20 years of experience, and only 1% with 10 to less than 15 years of experience.

Concerning age distribution, the majority, accounting for 70%, were aged between 20 to less than 30 years, followed by 16% aged more than 50 years, 10% aged between 30 to less than 40 years, and 4% aged between 40 to less than 50 years.

Regarding participation in courses related to antibiotics, 39% of participants answered "Yes," while 61% answered "No."

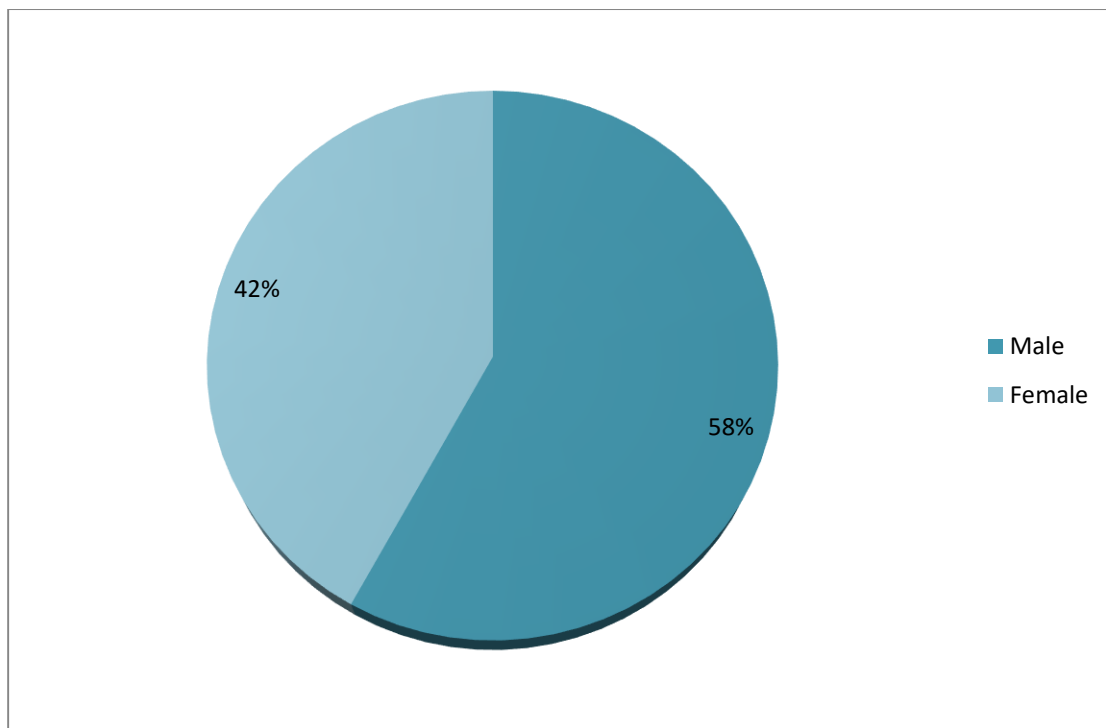
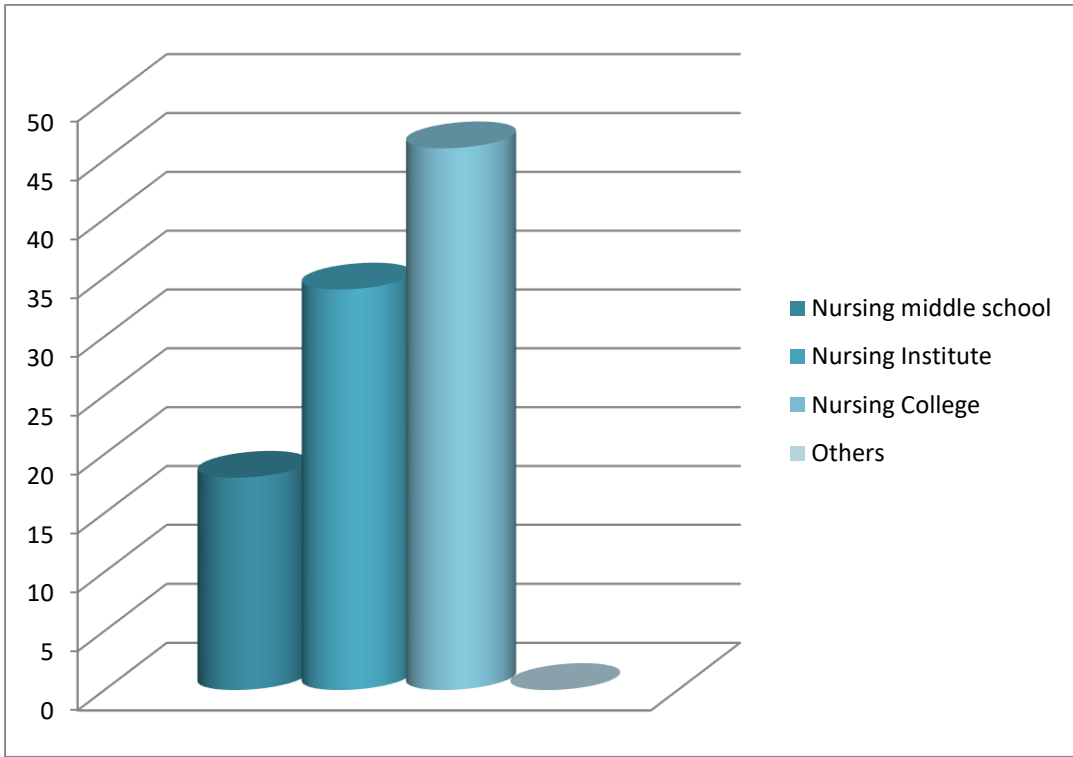


Figure (4-1) Distribution of the sample according to gender



Figure(4-2) Distribution of the sample according to Level of Education

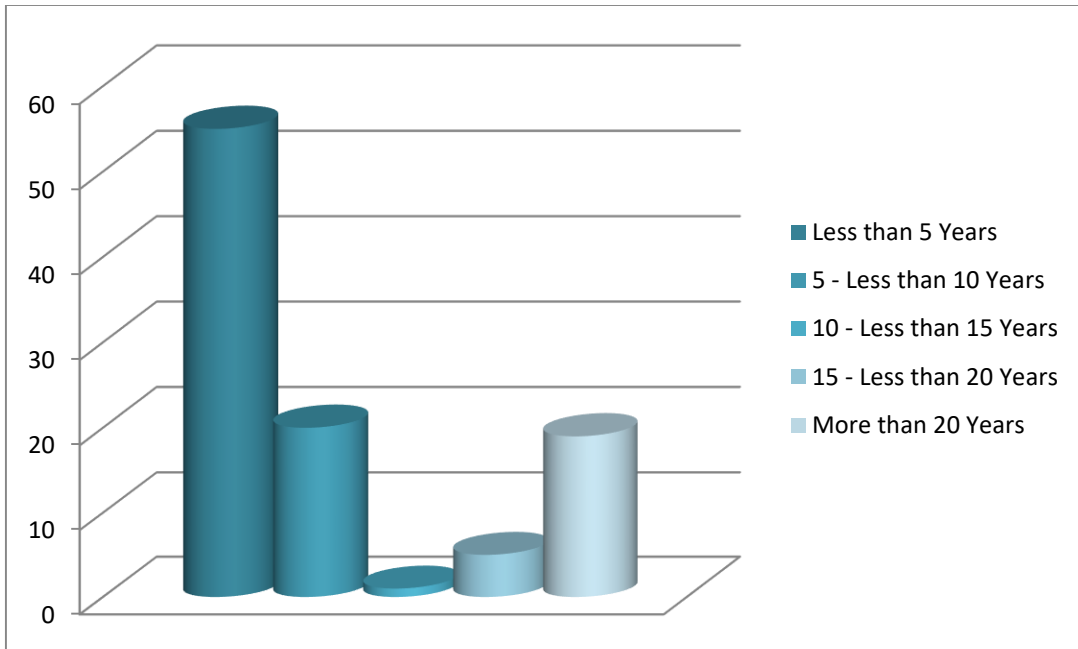


Figure (4-3) Distribution of the sample according to Years of Experience

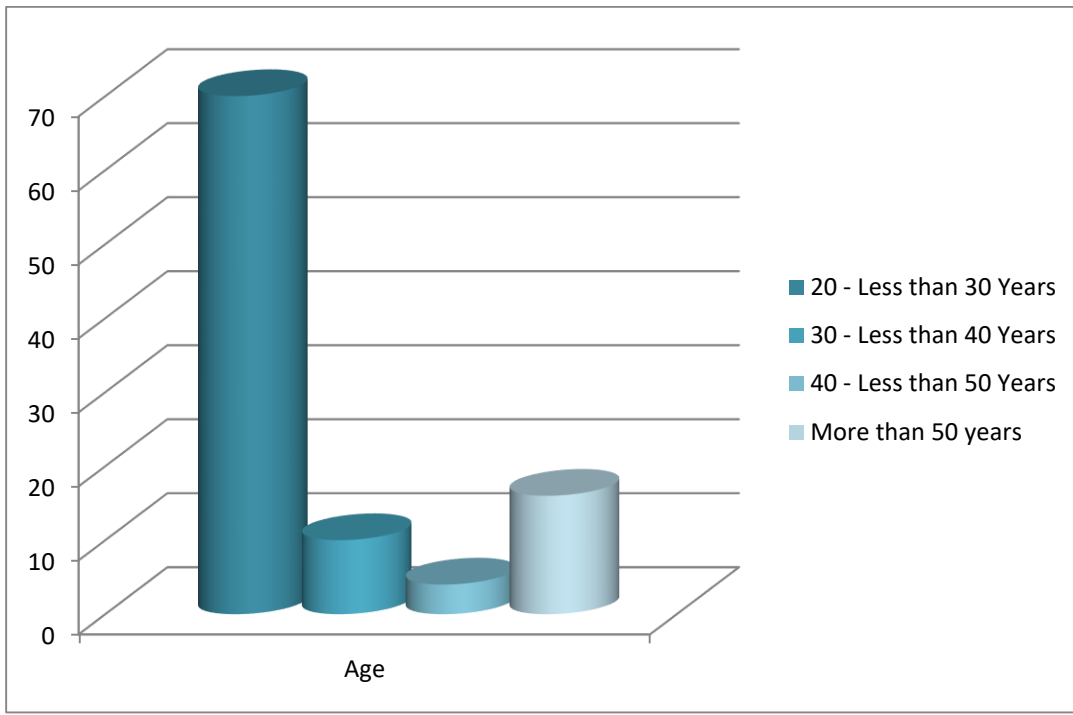


Figure (4-4) Distribution of the sample according to Age

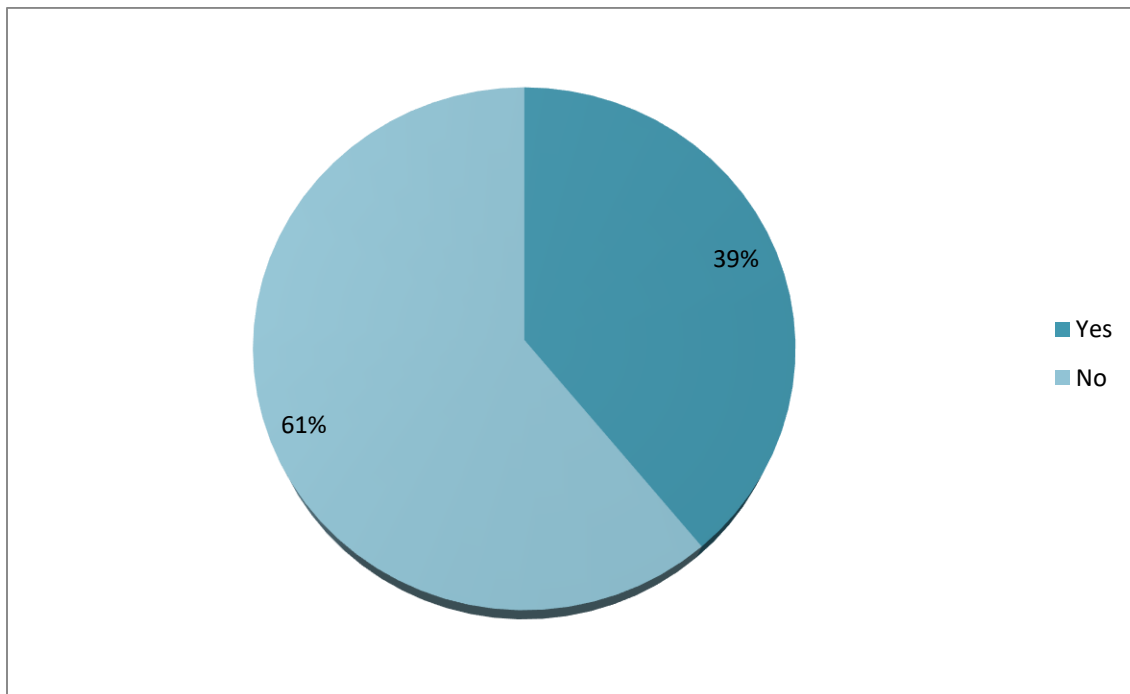


Figure (4-5) Distribution of the sample according to Participate in antibiotic courses

Table (4-2) Assessment of nurses knowledge about side effects of antibiotics drugs.

Knowledge Items	yes	no	I don't know	total Answer	correct answer
1. shock is a complication of antibiotics	76	22	2	100	76%
2. Antibiotics cause rashes	93	4	3	100	93%
3. Antibiotics cause respiratory and digestive disorder	81	14	5	100	81%
4. The use of antibiotics leads to occurrence of fungal infection in the mouth	45	39	16	100	45%
5. Uses of antibiotics cause kidney damage	80	12	8	100	80%
6. Antibiotics are used to treat infections caused by viruses	45	50	5	100	50%
7. the use of antibiotics leads to change in the color of the teeth	50	33	17	100	50%
8. treating colds and flu with antibiotics	46	46	8	100	46%
9. antibiotics reduce fever	79	16	5	100	16%
10. excessive use of antibiotics leads to antibiotic resistance	88	7	5	100	88%
11. misuse of antibiotic leads to more serious illness	66	24	10	100	66%
12. save the used antibiotics (vial or syrup) for later use	40	51	9	100	40%
13. explain the correct use of antibiotics to the patient	89	7	4	100	89%
14. allergy is one of the most common side effects of antibiotics	94	5	1	100	94%
15. excessive use of antibiotics affect the beneficial bacteria in the human body	74	11	15	100	74%
16. an antibiotic sensitivity test must be performed before it is administered to the patient	92	5	3	100	92%
17. check the instructions leaflet that come with antibiotics	86	12	2	100	86%
18. Do you know the right dose for each age group	80	14	6	100	80%
19. You know there are different groups of antibiotic	90	9	1	100	90%
20. drug interaction of antibiotic with other drugs	83	12	5	100	83%
21. There is needs of courses of antibiotic use and side Effects	92	6	2	100	92%
22. community need education for antibiotic use	94	3	3	100	94%
23. some types of antibiotics can't be used for children	82	8	10	100	82%
24. some types of antibiotics can't be used during pregnancy	89	7	4	100	89%
25. Did you encounter problem while using antibiotics	53	41	6	100	

The finding of this table show that 69.97% of the total answers were correct, While 23.8% of the total answer were wrong, And only 6.20% of the total answers were I don't know

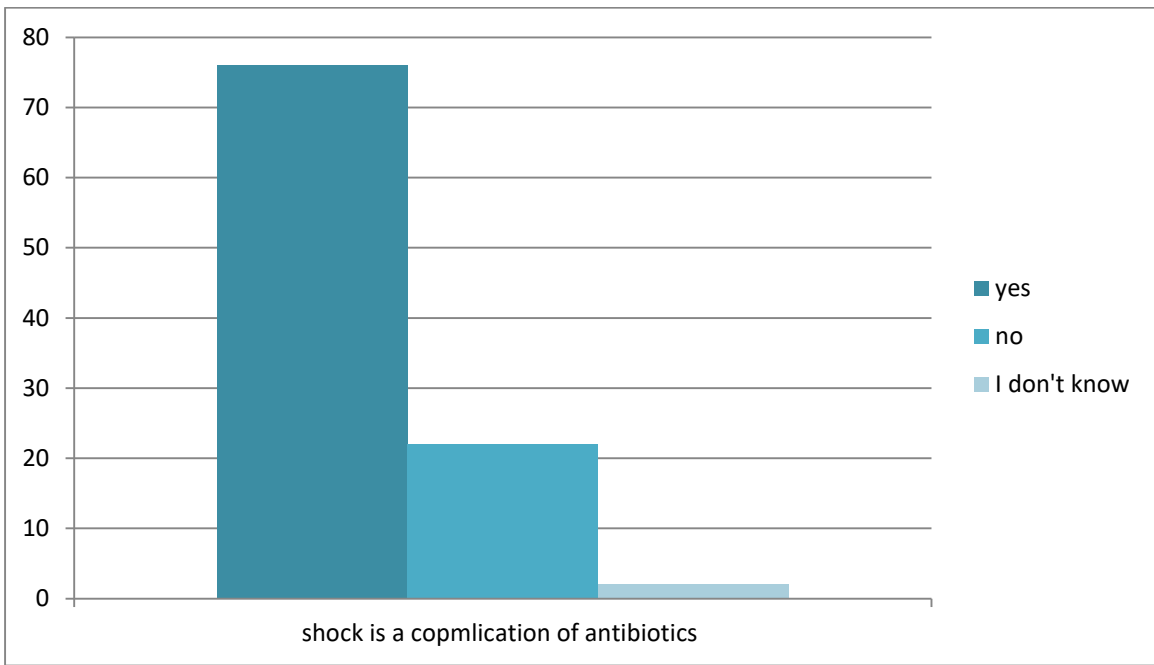


Figure (4-6) Knowledge about shock is a complication of antibiotics

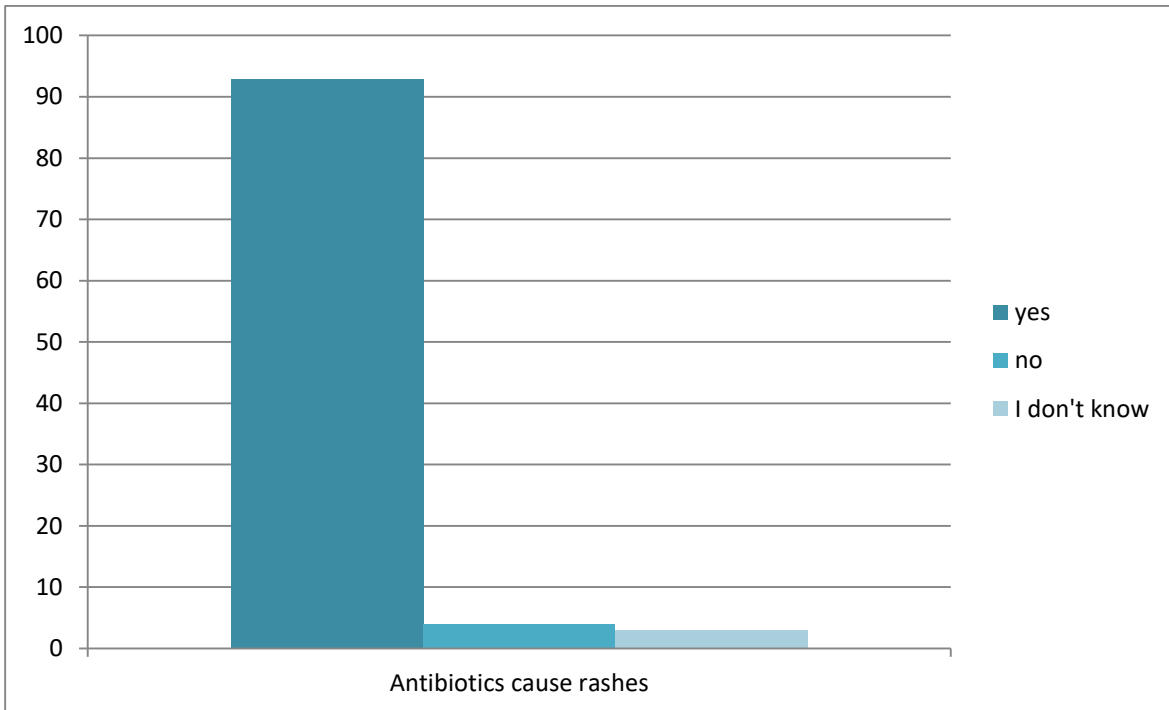


Figure (4-7) Knowledge about Antibiotics cause rashes

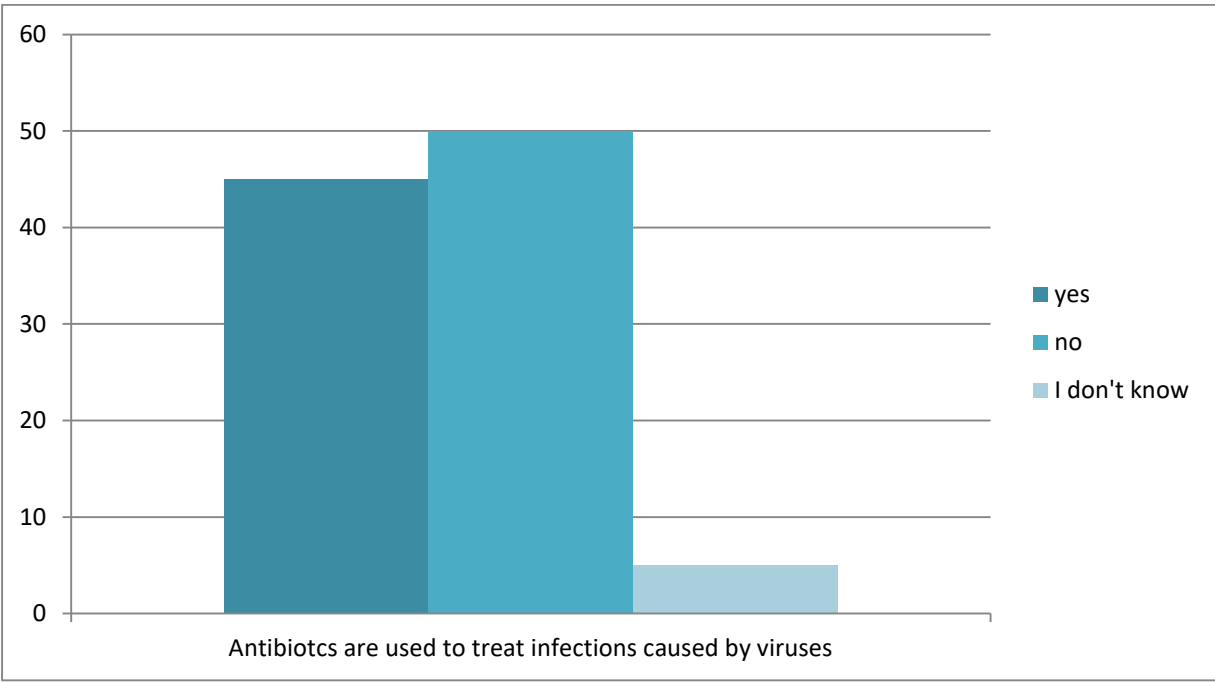


Figure (4-8) Knowledge about Antibiotics are used to treat infections caused by viruses

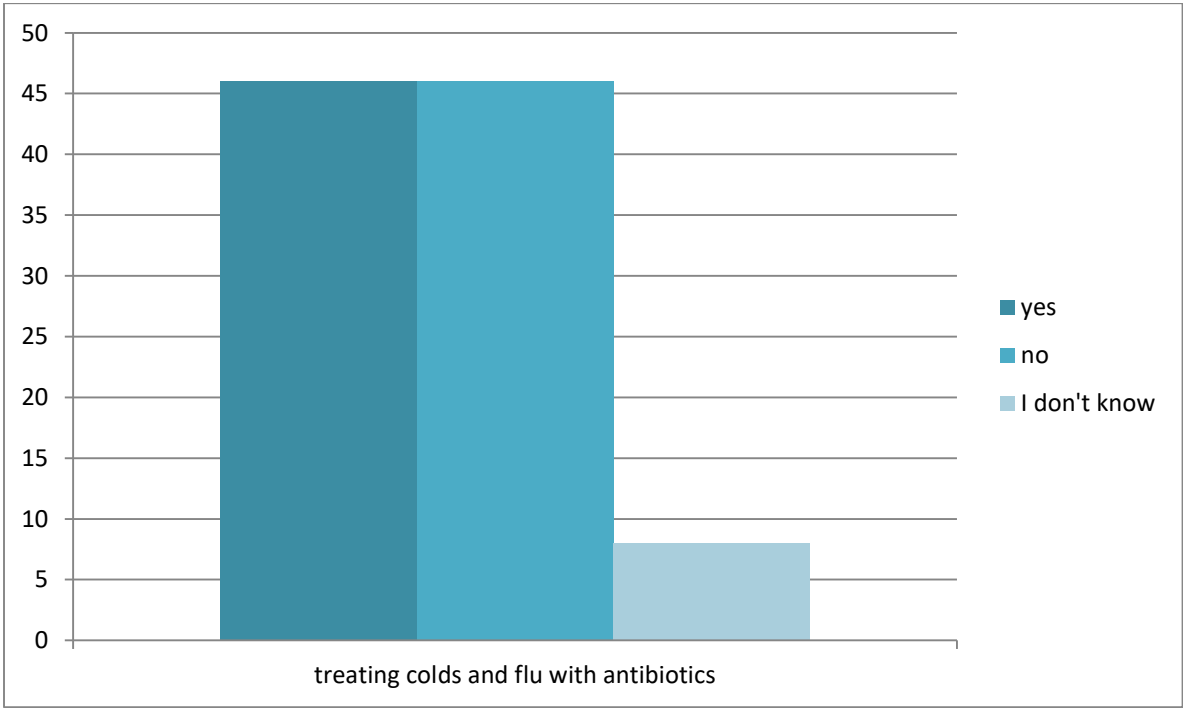


Figure (4-9) Knowledge about treating colds and flu with antibiotics

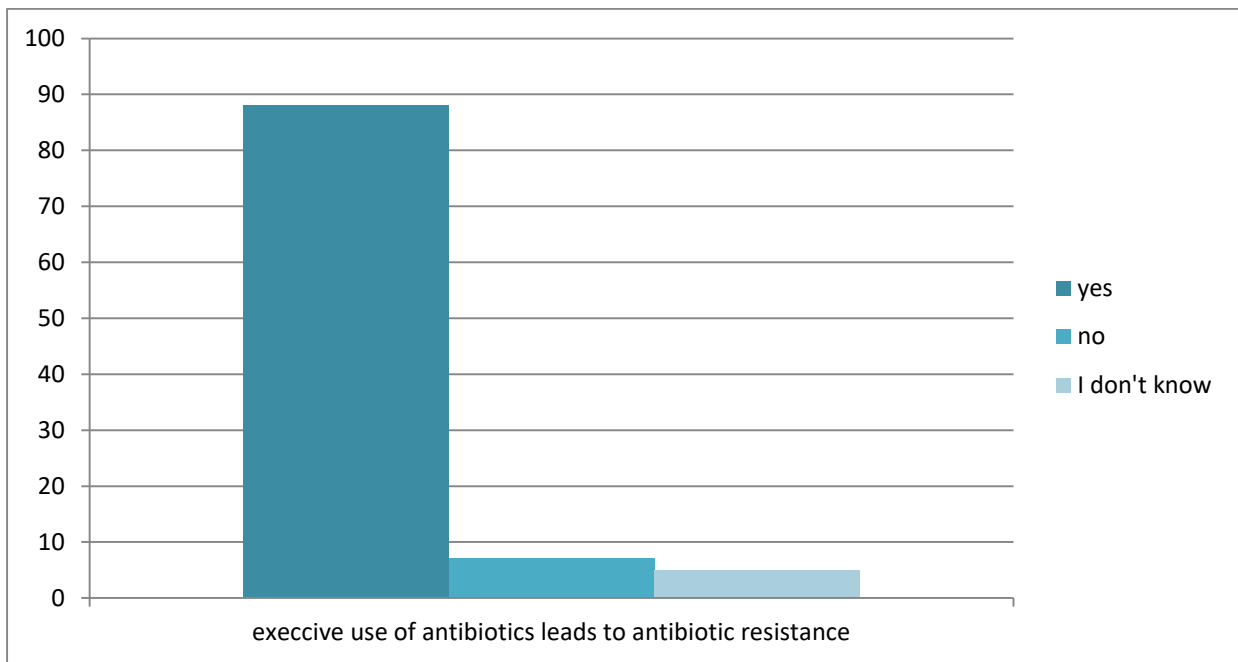


Figure (4-10) Knowledge about excessive use of antibiotics leads to antibiotic resistance

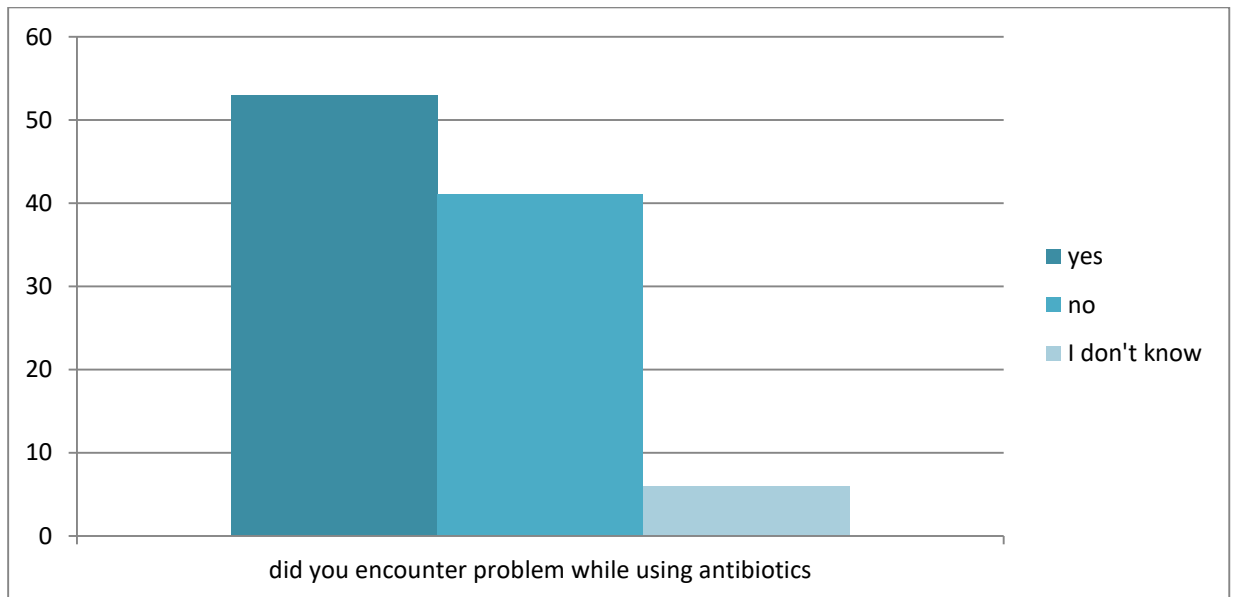
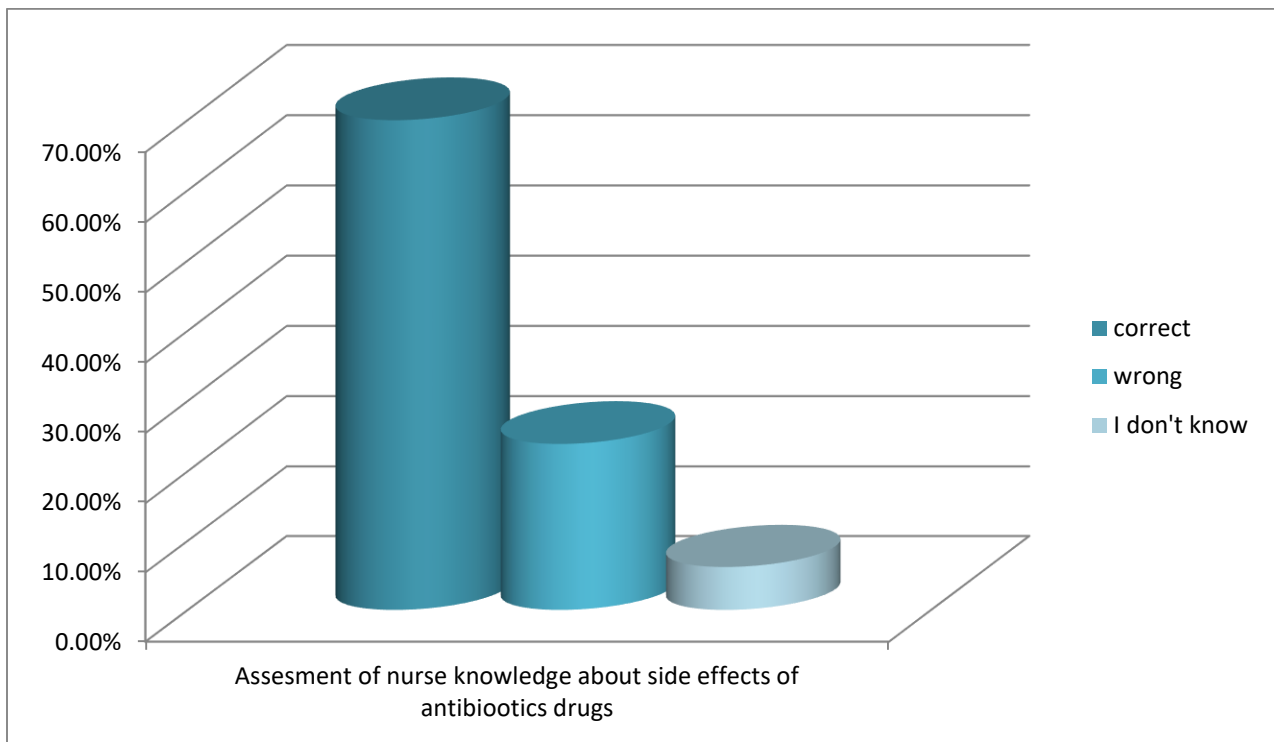


Figure (4-11) Distribution of the sample according to encountering problems while using antibiotics



Figure(4-12) Assessment of nurses knowledge about side effects of antibiotics drugs

Table (4-3) association between demographic characteristics knowledge of nurses about side effects of antibiotics drugs.

Item	Variable study	X ²	p.Value	sig
1.	Gender	2.560	0.33	N.S
2.	Education level	15.65	0.0025	H.S
3.	Years of Experince	2.48	0.48	N.S
4.	Age groups	1.48	0.5	N.S
5.	Did you Participate in courses related to antibiotic ?	11.85	0.0043	H.S

P-value= probability level; NS= Not significant; Sig.= Significance, HS: Highly Sig. At P<0.01; S: Sig. at P<0.05; NS: Non Sig. at P>0.05; X²= Chi-square observed value

The finding of this table shows that there is no significant association between level of Nurses knowledge about side effects of antibiotics drugs and Gender , Age groups, and years of experience.

But show association between level of Nurses' knowledge about side effects of antibiotics drugs and Level of education and participants in course related to antibiotics

Chapter five :Discussion of the Results

This chapter presents a systematically organized interpretation and reasonably derived discussion of the results with the support of the available literatures and related studies.

Part I: Discussion of Demographic Characteristics of participants (Table 4-1)

The finding of Table (4-1) show:

Gender Distribution: The data indicates a slight majority of male participants, comprising 58% of the sample, while females account for 42%. This gender distribution is consistent with the evolving trends in nursing demographics. Research by(Xu et al., 2020) corroborates this shift, suggesting an increasing proportion of male nurses in the workforce. This transformation reflects broader societal changes and the recognition of nursing as a viable career option for individuals of all genders.

Level of Education: Regarding educational background, the majority of participants (46%) hold a degree from Nursing College, followed by 34% from Nursing Institutes, and 18% from Nursing Middle Schools. These findings align with studies by (Li et al., 2018) and (Lee and Song, 2021), which underscore the significance of formal nursing education in preparing nurses for clinical practice. Such education equips nurses with essential knowledge and skills to deliver quality care and adapt to the complexities of healthcare settings effectively.

Years of Experience: The distribution of years of experience among participants shows that the majority (55%) have less than 5 years of experience, indicating a relatively young workforce. This observation is

supported by research conducted by(Liu and Aunguroch, 2019), which highlights a similar trend of a predominantly novice nursing workforce. Conversely, the presence of experienced practitioners with over 20 years of experience (19%) underscores the importance of intergenerational knowledge transfer and mentorship within nursing practice settings.

Age Distribution: In terms of age demographics, the majority of participants (70%) fall within the age range of 20 to less than 30 years. This demographic profile is consistent with studies by (Aiken et al., 2018) and(Stimpfel et al., 2020) ,indicating a prevalence of younger individuals entering the nursing profession. The aging workforce trend, with only a small proportion aged over 50 years (16%), underscores the need for succession planning and strategies to retain experienced nurses while attracting and supporting younger generations in their career development.

Participation in Courses Related to Antibiotics: Regarding participation in courses related to antibiotics, the data reveals that only 39% of participants have taken such courses, while the majority (61%) have not. This finding highlights a potential gap in continuing education and professional development opportunities related to antibiotic therapy. Research by (Dyar and Pulcini, 2017) emphasizes the importance of ongoing education to enhance nurses' knowledge and skills in antibiotic stewardship, ultimately contributing to improved patient outcomes and the prevention of antimicrobial resistance.

part II -Discussion of Nurses knowledge about side effects of antibiotics drugs.

Result in table (4-2) show that :

1. **Shock as a Complication of Antibiotics:** The finding that 76% of participants correctly identified shock as a potential complication of antibiotic use aligns with research by(Aiello et al., 2004), which

emphasizes that severe allergic reactions to antibiotics can lead to anaphylactic shock, underscoring the importance of recognizing this potential complication.

2. **Antibiotics Causing Rashes:** The high percentage (93%) of participants who correctly acknowledged that antibiotics can cause rashes is supported by studies conducted by (Blumenthal et al., 2018), which highlight that antibiotics, particularly penicillins and sulfonamides, are commonly associated with allergic skin reactions, including rashes and hives.
3. **Antibiotics Causing Respiratory and Digestive Disorders:** The finding that 81% of participants correctly identified respiratory and digestive disorders as potential side effects of antibiotics.
4. **Antibiotics Leading to Fungal Infections in the Mouth:** The relatively low percentage (45%) of participants who correctly recognized the risk of fungal infections in the mouth associated with antibiotic use is supported by findings from (Pappas et al., 2018), which indicate that prolonged antibiotic therapy, especially broad-spectrum agents like fluoroquinolones, can disrupt the normal oral flora, predisposing patients to oral candidiasis.
5. **Antibiotics Causing Kidney Damage:** The high percentage (80%) of participants who correctly identified kidney damage as a potential adverse effect of antibiotics aligns with research by (Farkas et al., 2018), which highlights that certain antibiotics, such as aminoglycosides and vancomycin, can induce nephrotoxicity, leading to acute kidney injury or chronic kidney disease.
6. **Antibiotics for Treating Viral Infections:** The finding that only 50% of participants correctly acknowledged that antibiotics are ineffective against viral infections is consistent with research by (Castro-Sánchez et al., 2018), which underscores that antibiotics

should not be prescribed to treat viral illnesses such as colds, influenza, or viral gastroenteritis.

7. **Antibiotics Leading to Tooth Discoloration:** The finding that 50% of participants correctly recognized the risk of tooth discoloration associated with antibiotic use is supported by guidelines from the American Academy of Pediatric Dentistry (AAPD), which emphasize that prolonged use of certain antibiotics during tooth development, such as tetracyclines, can cause permanent tooth discoloration in children.
8. **Treating Colds and Flu with Antibiotics:** The relatively low percentage (46%) of participants who correctly identified that antibiotics are not indicated for treating colds and flu is consistent with guidance from the Centers for Disease Control and Prevention (CDC), which emphasizes that antibiotics are ineffective against viral respiratory infections and should not be prescribed for such conditions.
9. **Antibiotics Reducing Fever:** The finding that only 16% of participants correctly recognized that antibiotics do not reduce fever directly is supported by research by (Paul and Elder, 2019), which confirms that antibiotics do not have a direct antipyretic effect and should not be used solely to reduce fever, as fever is often a symptom of an underlying infection that requires appropriate treatment.
10. **Antibiotic Resistance due to Excessive Use:** The high percentage (88%) of participants who correctly acknowledged that excessive antibiotic use contributes to antibiotic resistance is consistent with numerous studies, including those by the World Health Organization (WHO) (Reardon, 2014) and the Centers for Disease Control and Prevention (CDC) (Kadri, 2020), which highlight the link between excessive antibiotic use and the

development of antibiotic resistance, leading to diminished treatment efficacy and increased healthcare costs.

11. **Misuse of Antibiotics Leading to Serious Illness:** The finding that 66% of participants correctly recognized that misuse of antibiotics can lead to more serious illnesses is consistent with guidance from the Infectious Diseases Society of America (IDSA), which emphasizes that inappropriate antibiotic use, including overuse, misuse, and unnecessary prescribing, contributes to adverse outcomes, such as treatment failure, recurrent infections, and increased mortality rates.
12. **Saving Unused Antibiotics for Later Use:** The relatively low percentage (40%) of participants who correctly identified that saving unused antibiotics is not advisable is supported by guidelines from the Food and Drug Administration (FDA), which emphasize the importance of proper disposal of unused antibiotics to prevent self-medication, inappropriate use, and the development of antibiotic resistance.
13. **Explaining Correct Antibiotic Use to Patients:** The high percentage (89%) of participants who correctly acknowledged the importance of explaining the correct use of antibiotics to patients is consistent with research by (Dallas et al., 2017), which underscores the role of healthcare providers in educating patients about proper antibiotic use, including adherence to prescribed regimens, completion of treatment courses, and avoidance of unnecessary antibiotics.
14. **Allergy as a Common Antibiotic Side Effect:** The high percentage (94%) of participants who correctly recognized allergy as one of the most common side effects of antibiotics is supported by studies by (Macy and Contreras, 2014), which highlight that antibiotic allergies are among the most common

adverse drug reactions, underscoring the importance of allergy assessment and avoidance of implicated agents.

15. **Impact of Excessive Antibiotic Use on Beneficial Bacteria:** The finding that 74% of participants correctly acknowledged the adverse effects of excessive antibiotic use on beneficial bacteria in the human body is consistent with research by Cho et al. (2018), which demonstrates that excessive antibiotic use disrupts the normal gut microbiota, leading to dysbiosis, increased susceptibility to infections, and metabolic disturbances.
16. **Necessity of Antibiotic Sensitivity Testing:** The high percentage (92%) of participants who correctly acknowledged the necessity of antibiotic sensitivity testing before administration is supported by guidelines from the Clinical and Laboratory Standards Institute (CLSI), which recommend antibiotic sensitivity testing to guide empirical therapy selection, optimize treatment outcomes, and prevent the emergence of multidrug-resistant pathogens.
17. **Checking Antibiotic Instructions Leaflet:** 86% of participants correctly recognized the importance of checking antibiotic instructions leaflets. This emphasizes the role of patient education in promoting safe and effective antibiotic use.
18. **Knowledge of Correct Antibiotic Doses:** 80% of participants correctly identified the importance of knowing the correct antibiotic doses for different age groups. This underscores the need for healthcare professionals to adhere to evidence-based dosing guidelines to ensure optimal treatment outcomes.
19. **Awareness of Different Antibiotic Groups:** A vast majority (90%) correctly identified the existence of different antibiotic groups. This knowledge is essential for selecting appropriate agents based on microbial susceptibility and patient factors.

20. **Understanding Antibiotic Drug Interactions:** The finding that 83% of participants correctly acknowledged the potential for drug interactions with antibiotics is supported by drug interaction databases, such as Lexicomp and Micromedex, which provide comprehensive information on potential interactions between antibiotics and other medications. This underscores the importance of medication reconciliation to prevent adverse drug interactions and optimize therapeutic outcomes.
21. **Need for Antibiotic Use and Side Effects Courses:** The high percentage (92%) of participants who correctly recognized the need for courses on antibiotic use and side effects is consistent with continuing education initiatives offered by organizations such as the Society for Healthcare Epidemiology of America (SHEA) and the American College of Clinical Pharmacy (ACCP). These courses provide healthcare professionals with opportunities to enhance their knowledge and skills in antibiotic stewardship and adverse drug reaction management, ultimately improving patient care outcomes.
22. **Community Education on Antibiotic Use:** A significant majority (94%) correctly acknowledged the need for community education on antibiotic use. Public awareness campaigns play a crucial role in promoting responsible antibiotic use and combating antimicrobial resistance.
23. **Restrictions on Antibiotic Use in Children:** 82% of participants correctly recognized that certain types of antibiotics cannot be used in children. Pediatric-specific antibiotic guidelines are essential for ensuring safe and effective treatment in this vulnerable population.
24. **Restrictions on Antibiotic Use during Pregnancy:** 89% of participants correctly acknowledged that certain types of

antibiotics cannot be used during pregnancy. This awareness underscores the importance of prenatal care and judicious antibiotic prescribing to minimize fetal risks.

25. **Encountering Problems with Antibiotic Use:** The data regarding problems encountered while using antibiotics indicate a need for further analysis to identify specific issues and potential areas for improvement in antibiotic prescribing and management practices.

Part III: Discussion association between demographic characteristics knowledge of nurses about side effects of antibiotics drugs.

Result in table (4-3) show that Results shows that weak relationships are a proved between nurses knowledge about side effects of antibiotics drugs. with Age, Gender, and years of experiences since no significant relationships were accounted at $P > 0.05$, While wear strong relationship were approved with level of education and participants in course related to antibiotics.

Chapter six : Conclusion and Recommendations

6.1 Conclusion

1- Highest percentage were (with nursing College, have less than 5 years" experience, with age from 20 to less than 30 years, did not participate in course related to antibiotics) and more than half were male.

2-The nurses' which participants in the study were have good knowledge about side effects of antibiotics drugs, where nearly than Three-quarters of answer correct answer

3-There was no statistically significant relationship between age, gender, years of experience with Nurses' knowledge about side effects of antibiotics drugs, while there was significant relationship between Level of education, and Participate in antibiotic courses with Nurses' knowledge about side effects of antibiotics drugs.

6.2 Recommendations

Based on the findings and discussions of the study, the following recommendations are proposed to enhance knowledge and practices regarding antibiotics and their side effects among nursing cadres:

- 1. Enhanced Cooperation between Training Institutions and Nursing Cadres:** Establishing collaboration between training and development institutions and nursing cadres is crucial to elevate knowledge levels, especially among those with intermediate and secondary nursing degrees. This cooperation can facilitate tailored educational programs to address specific knowledge gaps and promote continuous learning among nursing professionals.
- 2. Conducting Courses on Antibiotic Side Effects:** Organizing specialized courses focused on introducing the side effects of antibiotics, particularly targeted at new nurses and those with

secondary nursing degrees, is essential. These courses should provide comprehensive information on the adverse effects associated with various classes of antibiotics, emphasizing recognition, management, and prevention strategies.

3. **Increased Involvement of Nursing Officials in Knowledge Evaluation:** Nursing officials should play a more active role in evaluating nurses' knowledge of antibiotic side effects. Regular assessments and knowledge checks can help identify areas for improvement and guide targeted educational interventions to enhance understanding and competency among nursing staff.
4. **Incorporating Antibiotic Knowledge Assessment into Nurse Evaluation:** Nurses' competency assessments should include an evaluation of their knowledge regarding antibiotics and their side effects. This inclusion ensures that nurses are equipped with the necessary information to make informed decisions about antibiotic prescribing, administration, and monitoring.
5. **Providing Educational Resources:** Distributing leaflets, posters, and murals that define the side effects of antibiotics can serve as valuable educational resources for nursing staff. These visual aids can be displayed in healthcare facilities to reinforce knowledge and promote awareness among both healthcare professionals and patients.
6. **Implementation of Practical Training:** There is a need for practical training programs focused on dealing with the side effects of antibiotics. Integrating such training within nursing curricula and professional development courses enables nurses to gain hands-on experience in recognizing, managing, and mitigating antibiotic-related adverse effects effectively.
7. **Courses on Antibiotic Administration Indications and Dosage:** Holding courses specifically designed to educate nurses on the

indications for antibiotic administration and appropriate dosage for various patient conditions is imperative. These courses should cover evidence-based guidelines for antibiotic prescribing, dosing considerations based on patient factors, and strategies for optimizing therapeutic outcomes while minimizing the risk of antimicrobial resistance.

Contribution of authors :

1. جعفر علي كاظم

Choosing the title of research, analyzing of the data, participate in data collection and help in choosing questionnaire design.

2. احمد عبد الرحيم نبات

Writing the introduction of the research, writing the recommendations of research, participate in data collection and added few question to the questionnaire, writing and editing the references.

3. رامي عامر عباس

Inserting of the data on the excel program, participate in data collection and added few questions to the questionnaire.

4. الحسن علاء حسين

Review of the questionnaire in the pilot study, participated in data collection and helped with organizing the research and finalizing it.

5. عباس عبد الرحمن سلمان

Participated in writing of lecture review, participated in data collection and gave ideas about the questionnaire design.

6. رسل غثوان

Helped in final discussion about the title of research, discussion of table (4-1) (distribution of demographic characteristics of the study), participated in data collection & gave ideas about questionnaire design.

7. زينب ولاء

Gave ideas for alternative title of the research, participated in writing of lecture review, participated in data collection, gave ideas for alternative methods of data collection.

8. آية بهاء

Discussion of part of Table (4-2) (assessment of nurses knowledge about side effects of antibiotics drugs), participated in data collection and helped with questionnaires design.

9. Discussion of part of Table (4-2) (assessment of nurses knowledge about side effects of antibiotics drugs), participated in data collection and helped decide final questionnaire design.

10. زينب علي جليل

Discussion of part of table (4-3) (association between demographic characteristics knowledge of nurses about side effects of antibiotics drugs), participated in data collection and review and edited parts of the pilot questions.

11. اسيل بشار

Discussion of part of table (4-3) (association between demographic characteristics knowledge of nurses about side effects of antibiotics drugs), participated in data collection and helped with final questionnaire design.

12. نور الهدى محمد

Discussion of part of table (4-2) (assessment of nurses knowledge about side effects of antibiotics drugs), participated in data collection and helped with questionnaire design.

13. صفا حيدر

Participated in writing methodology of research, editing the questionnaire in the pilot study, participated in data collection and helped with final questionnaire design.

14. جوهرة حيدر عبيد

Participated in writing methodology of research, participated in data collection and added few questions to the questionnaire.

15. علا مازن

Participated in writing of lecture review, participated in data collection and helped with questionnaire design.

All of the names listed above also helped with brainstorming and finding references and ideas involving most aspects of this research report & the work was coherent & coordinated.

Appendix :

here is the questionnaire used for this study report

Questionnaire

الاستمارة الاستثنائية

اخى الممرض العزيز اختى الممرضة العزيزة

تحية حب و تقدير و احترام لكم.

تقييم معارف الملاكات التمريضية حول التأثير الجانبي للمضادات الحيوية في مستشفيات محافظة بابل التعليمية

Assessment of nurse knowledge about antibiotics side effects in teaching hospitals in

Babil

يرجى الإجابة على الفقرات ادناه دون كتابة اسمك. و جميع المعلومات التي ستدلي بها ستحاط بسرية تامة و لأغراض البحث العلمي فقط شكرا لحسن تعاملكم معنا و مشاركتكم.

- العمر /
- الجنس / ذكر انثى كلية أخرى معهد اعدادية / المستوى التعليمي / مكان العمل / (المستشفى/الردهة/القسم/الوحدة):

-
- سنوات الخدمة /
- هل مشترك بدورة عن المضادات الحيوية؟ نعم لا
- إذا كانت الإجابة (نعم)
- B عدد الدورات ()
- B تاريخ الاشتراك بالدورات:

ت	الفقره	نعم	كلا	لا اعرف
1.	الصدمة هي من مضاعفات استخدام المضادات الحيوية (shock)			
2.	تسبب المضادات الحيوية الطفح الجلدي			
3.	تسبب المضادات الحيوية اضطرابات في الجهاز التنفسي و الهضمي			
4.	يؤدي استخدام المضادات الحيوية الى حدوث التهابات فطرية بالفم			
5.	يؤدي استخدام المضادات الحيوية الى حدوث تلف في الكلى			
6.	تستخدم المضادات الحيوية في علاج الالتهابات التي تسببها الفايروسات			
7.	يؤدي استخدام المضادات الحيوية الى تغيير لون الاسنان			
8.	علاج نزلات البرد والانفلونزا بالمضادات الحيوية			
9.	تقلل المضادات الحيوية من الحمى			
10.	تناول المضادات الحيوية بكثرة يؤدي الى حدوث مقاومه للمضادات الحيوية			
11.	يؤدي سوء استخدام المضادات الحيوية الى مرض اكثر خطورة			
12.	تحتفظ بالمضادات الحيوية المستخدمة (فيال او شراب) لاستخدامها لاحقاً			
13.	شرح الاستخدام الصحيح للمضادات الحيوية للمريض			
14.	التحسس هو احد الاعراض الجانبية الاكثر شيوعاً للمضادات الحيوية			
15.	يؤثر الاستخدام المفرط للمضادات الحيوية على البكتيريا النافعة للجسم			
16.	يجب اجراء اختبار تحسس للمضادات الحيوية قبل اعطائه للمريض			
17.	تتحقق من نشرة التعليمات التي تأتي مع المضادات الحيوية			
18.	لديك المعرفة بجرعة المضادات الحيوية المناسبة لكل عمر			
19.	تعلم ان هناك مجموعات مختلفة من المضادات الحيوية			
20.	يؤثر استخدام المضادات الحيوية عند استخدامها مع العلاجات الاخرى			
21.	هناك حاجة لإقامة دورات حول الاستخدام الامثل و التأثير الجانبي للمضادات الحيوية			
22.	المجتمع بحاجة الى تثقيف حول استخدام المضادات الحيوية			
23.	بعض المضادات الحيوية محظورة الاستخدام لدى الأطفال			
24.	بعض المضادات الحيوية محظورة الاستخدام اثناء فترات محددة من الحمل			
25.	هل صادفت مشكلة عند إعطاء المضاد الحيوي لمريض			

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