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Assessing the Side Effects of Antibiotic Use: A Field Study at Tarhuna Teaching Hospital and Selected Inpatient Clinics in the City, and Their Role in Promoting Rational Therapeutic Practices

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تقييم الآثار الجانبية لاستخدام المضادات الحيوية: دراسة ميدانية في مستشفى ترهونة التعليمي وبعض مصحات المدينة الإوائية ودورها في تعزيز الممارسات العلاجية الرشيدة

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Abstract

This research investigates the side effects associated with antibiotic use, based on a field study conducted at Tarhuna Teaching Hospital and residential healthcare centers in Tarhuna city. The study begins by highlighting the significance of antibiotics since the discovery of penicillin, and the health challenges caused by their overuse and misuse, such as gastrointestinal disturbances, liver or kidney damage, allergic reactions, and microbiome imbalance.

The research focuses on the relationship between the type of antibiotic used, dosage, and duration of treatment, and how these variables affect the occurrence of side effects. The study sample consisted of 48 participants, 54.2% of whom were male, with the age group 10–20 years representing the majority (37.5%). Tarhuna Teaching Hospital accounted for the highest participation rate (47.9%).

Findings showed that penicillin was the antibiotic most frequently linked to adverse effects (29.2%), with difficulty in breathing being the most common symptom (18.8%), followed by

gastrointestinal issues. Additionally, 72.9% of participants discontinued antibiotic use due to side effects.
The study concludes that rational antibiotic use and increased awareness of their risks are essential. It recommends improving medical education, adopting personalized therapeutic strategies, and developing effective policies for drug monitoring and patient safety.

Keywords: Antibiotics, Side Effects, Tarhuna, Rational Use, Bacterial Resistance, Penicillin.

الملخص
يتناول هذا البحث الآثار الجانبية الناتجة عن استخدام المضادات الحيوية، بالاعتماد على دراسة ميدانية أُجريت في مستشفى مدينة ترهونة التعليمي والمصحات الإيوائية بالمدينة. يبدأ البحث بعرض أهمية المضادات الحيوية منذ اكتشاف البنسلين، مع الإشارة إلى التحديات الصحية الناجمة عن الإفراط في استخدامها أو تناولها بطرق غير صحيحة، مثل اضطرابات الجهاز الهضمي، وتلف الكبد أو الكلى، وردود الفعل التحسسية، واختلال التوازن الميكروبي في الأمعاء.
تركّز الدراسة على العلاقة بين نوع المضاد الحيوي المستخدم، والجرعة، ومدة العلاج، ومدى تأثير هذه العوامل في ظهور الأعراض الجانبية. شملت العينة (48) مشاركًا، بلغت نسبة الذكور (54.2%)، وكانت الفئة العمرية (10–20 سنة) الأكثر تمثيلًا بنسبة (37.5%). وأظهرت النتائج أن مستشفى ترهونة كان الأكثر مشاركة بنسبة.(47.9%)
بيّنت الدراسة أن البنسلين هو المضاد الحيوي الأكثر ارتباطًا بحدوث التأثيرات الجانبية بنسبة (29.2%)، وأن صعوبة التنفس كانت من أكثر الأعراض شيوعًا (18.8%)، تلتها أعراض الجهاز الهضمي. كما تبيّن أن (72.9%) من المشاركين توقفوا عن تناول المضاد الحيوي نتيجة لهذه الأعراض.
خلصت الدراسة إلى أن الاستخدام الرشيد والتوعية بمخاطر المضادات الحيوية أمران أساسيان لتقليل الأضرار المحتملة، وأوصت بضرورة تحسين التعليم الطبي، وتطبيق استراتيجيات علاجية موجهة، ووضع سياسات فعالة لمراقبة الأدوية وضمان سلامة المرضى.

الكلمات المفتاحية: المضادات الحيوية، الآثار الجانبية، ترهونة، الاستخدام الرشيد، المقاومة البكتيرية، البنسلين.

Introduction:

Antibiotics are among the most significant medical discoveries that have revolutionized healthcare, contributing greatly to improving public health and increasing human life expectancy. Since Alexander Fleming discovered penicillin in 1928, modern medicine has witnessed an unprecedented therapeutic revolution that fundamentally transformed the management of bacterial infections. Antibiotics have since become the cornerstone in treating numerous diseases that were once fatal.

However, the widespread and excessive use of these drugs has led to serious health problems, including various side effects that can severely impact human health, in addition to the emergence of resistant bacterial strains that are difficult to treat using conventional methods.

The side effects of antibiotics range from mild and temporary disturbances such as nausea and gastrointestinal discomfort to more serious complications such as liver or kidney damage, or severe allergic reactions that may lead to anaphylaxis. Alarmingly, some cases require immediate medical intervention, raising essential questions about how to balance the therapeutic benefits of antibiotics with their potential risks.

One of the most concerning issues highlighted in recent studies is the impact of antibiotics on the gut microbiome. Antibiotics do not distinguish between beneficial and harmful bacteria, leading to an imbalance in the intestinal microbial community. This imbalance may result in various health problems such as fungal infections or chronic gastrointestinal disorders like irritable bowel syndrome (IBS).

Moreover, the irrational use of antibiotics—whether through incorrect dosages or without a prescription—contributes significantly to the aggravation of bacterial resistance, now considered one of the most pressing global health challenges. Addressing this issue requires

intensified research efforts to develop new antibiotics, as well as the implementation of strict health policies to regulate antibiotic prescriptions and ensure their responsible use.

Drug interactions also play a crucial role in determining the severity of antibiotic side effects, as the concurrent use of antibiotics with other medications or supplements may cause unexpected reactions. Therefore, patient education about adhering to medical instructions and prescribed dosages is essential to minimize such interactions and ensure safe and effective treatment outcomes.

This research is based on a field study conducted at Tarhuna Teaching Hospital and several inpatient clinics in the city. Questionnaires were distributed among patients who used antibiotics within a specific period. The study aims to analyze collected data to identify the most common side effects among patients and to assess their awareness of the risks associated with random antibiotic use without medical consultation. Additionally, the study examines statistical correlations between the type of antibiotic used, dosage, and treatment duration on one hand, and the appearance of various side effects on the other.

The findings of this research will help enhance public health awareness and provide recommendations for more effective antibiotic management within healthcare institutions, thereby reducing side effects and improving the quality of medical care provided to patients.

Research Problem

The research problem lies in the increasing number of cases suffering from complications caused by the improper or excessive use of antibiotics in Tarhuna Teaching Hospital and local clinics. This issue highlights the need to analyze the causes and consequences of such misuse and to establish mechanisms to mitigate it.

Research Methodology

The study adopted a descriptive-analytical field approach. Data were collected through questionnaires distributed to 48 participants at Tarhuna Teaching Hospital and local inpatient clinics to analyze the relationship between the type of antibiotic, dosage, and treatment duration, and the occurrence of side effects. The data were analyzed using the SPSS software to derive statistical results.

Research Boundaries

The study was limited to patients treated with antibiotics in Tarhuna, focusing on side effects observed during a short period of antibiotic use.

Temporal Boundaries

The research was conducted during the year 2024, with data collection taking place between September 15 and December 15, 2024.

Spatial Boundaries

The study was limited to Tarhuna Teaching Hospital and several local clinics, including Balj Clinic, Taiba Clinic, and Al-Safaa Clinic.

Research Significance

This research highlights the need to enhance understanding of the side effects associated with antibiotic use by emphasizing the health risks of misuse and overuse. It contributes to improving medical practices through accurate data on common adverse effect patterns, aiding in the development of safer and more effective therapeutic strategies. The study also supports awareness initiatives aimed at reducing bacterial resistance to antibiotics—a global challenge that demands innovative solutions and integrated health policies.

Research Objectives

This study aims to evaluate the adverse reactions associated with antibiotic use in Tarhuna during 2025 through the analysis of survey data, identifying the most common patterns of side effects and the drugs most likely to cause them.

Research Hypotheses

1. There is a correlation between the type of antibiotic used and the occurrence of side effects.
2. The dosage and duration of antibiotic treatment affect the severity of side effects.
3. There are differences in patients' awareness of the risks associated with antibiotic use.
4. Discontinuing antibiotic treatment due to side effects is a common behavior among patients.

Research Questions

1. What are the most common side effects among patients using antibiotics at Tarhuna Teaching Hospital and local clinics?
2. How do dosage and treatment duration affect the occurrence of side effects?
3. Which antibiotic is most frequently associated with side effects?
4. To what extent are patients aware of the risks of using antibiotics without a prescription?
5. What actions do patients take when side effects occur during treatment?

Previous Studies

Local literature reveals several studies that have examined the complications resulting from antibiotic use in Libyan hospitals—whether due to overuse or irrational administration. Their findings varied across clinical, laboratory, and statistical dimensions. The most notable studies are summarized below:

1. Study on the Effects of Antibiotic Misuse in Tripoli Hospitals

This study investigated the health consequences of uncontrolled antibiotic use and established a correlation between improper medication practices and rising bacterial resistance rates, which in turn aggravated clinical complications. The findings showed a clear relationship between antibiotic misuse, immune system disturbances, and increased susceptibility to secondary infections.

Key Findings:

• Increased bacterial resistance due to excessive or random antibiotic prescriptions.
• Various health complications, primarily immune dysfunction and a higher risk of secondary infections.

2. Research on Antibiotic Resistance Patterns in Sebha Hospitals

This study focused on examining bacterial resistance patterns resulting from excessive antibiotic use among patients in Sebha hospitals. The results demonstrated that random and unprescribed use of these medications led to the emergence of resistant bacterial strains that were difficult to treat. Additionally, some patients exhibited liver and kidney damage caused by repeated exposure to inappropriate antibiotic doses.

Key Findings:

• The spread of bacterial strains resistant to multiple types of antibiotics.
• Partial liver and kidney damage among patients due to recurrent improper dosing.

3. Evaluation of Antibiotic Side Effects in the Pediatric Department of Zliten Hospital

This study analyzed the adverse effects of antibiotic use among children, revealing that inappropriate administration caused imbalances in gut microbiota, leading to diarrhea and other digestive problems. It also recorded instances of skin allergies in some children who received specific antibiotics without proper medical supervision.

Key Findings:

• Prevalence of diarrhea caused by disrupted gut microbial balance.
• Occurrence of allergic skin reactions in some children due to improper antibiotic use.

Research Methodology, Materials, and Methods

Study Instrument:

Scientific research employs various tools to collect information, data, and facts, including observation, questionnaires, interviews, tests, and different types of scales. Among these, the *questionnaire* is one of the most commonly used instruments for gathering data and information about individuals. It is an effective tool composed of multiple items and dimensions designed to obtain facts related to a specific phenomenon by targeting respondents directly involved in the topic.

In this study, the questionnaire was structured as follows:

1. Personal information.
2. Hospital or clinic (Tarhuna Teaching Hospital and inpatient clinics in Tarhuna).
3. Duration of stay in the hospital or clinic.
4. Severity of the side effects.
5. Type of antibiotic used.
6. Type of side effect.
7. Management of side effects resulting from antibiotic use.

Statistical Analysis Methods:

After coding, the collected data were entered into a computer for statistical analysis using the *Statistical Package for the Social Sciences (SPSS)* software.

The following analytical methods were applied:

- **Frequency distributions** were used to determine the number and percentage of responses for each item in relation to the total sample, in order to identify the relative importance of each response and provide a preliminary overview of participants' answers.

Study Population:

The study population consisted of inpatients at *Tarhuna Teaching Hospital* and the inpatient clinics within Tarhuna city. The study included patients who had used antibiotics during a specific period. A *simple random sample* of **48 participants** was selected from this population to analyze data concerning antibiotic-related side effects and assess their awareness of the associated health risks.

Demographic Characteristics of the Study Population:

1. **Gender:**
   - Male: 54.2%
   - Female: 43.8%
2. **Age Group:**
   - Most represented group: 10–20 years (37.5%)
   - Followed by: 21–30 years (35.4%)
3. **Place of Treatment:**
   - Tarhuna Teaching Hospital: 47.9%
   - Other clinics in Tarhuna, such as *Balj Clinic*, *Taiba Clinic*, and *Al-Safaa Clinic*.
4. **Length of Stay:**
   - 50% of participants stayed 1–2 days.
   - 27.1% stayed 3–4 days.

These characteristics help clarify the overall research context and enhance the precision of the derived results.

Questionnaire Information:

Table (1): Distribution of Questionnaires.

Distributed Forms	Collected Forms	Response Rate	Lost Forms	Loss Percentage
48	48	100%	0	0%

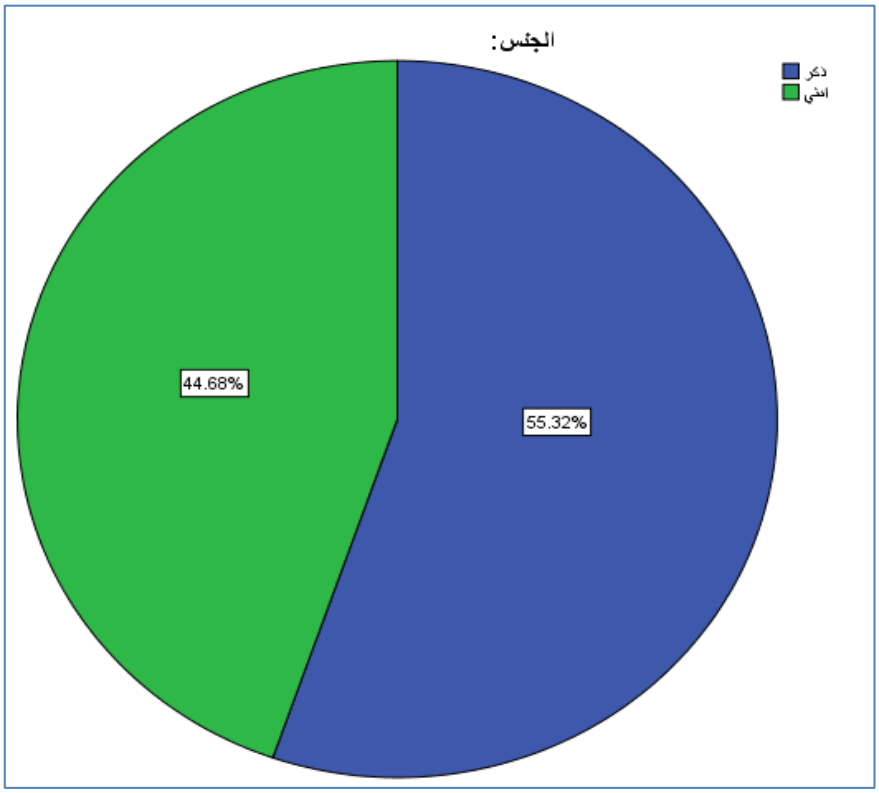
Analysis and Presentation of Study Data:

Table (2): Gender Distribution of the Study Sample

Gender	Frequency	Percentage (%)
Male	26	54.2
Female	21	43.8
Missing	1	2.1
Total	**48**	**100.0**

Table (2) shows that the number of male participants was **26 (54.2%)**, while the number of female participants was **21 (43.8%)**. One questionnaire was recorded as missing (**2.1%**). The results indicate that males represent the majority of the study sample.

Figure (1) illustrates this distribution graphically**.**



2. Age

Table (3): Distribution of the Study Sample by Age Group

Age Group	Frequency	Percentage (%)
10–20	18	37.5
21–30	17	35.4
31–40	8	16.7
41–50	3	6.3
51 and above	1	2.1
Missing	1	2.1
Total	**48**	**100.0**

Table (3) illustrates the age distribution of the study sample. The age group 10–20 years represents the largest portion of participants, accounting for 37.5% of the sample, followed by the 21–30 years group with 35.4%. The proportions decline among older participants, with 16.7% in the 31–40 age group, 6.3% in the 41–50 group, and 2.1% aged 51 years or above. One case (2.1%) was recorded as missing data.

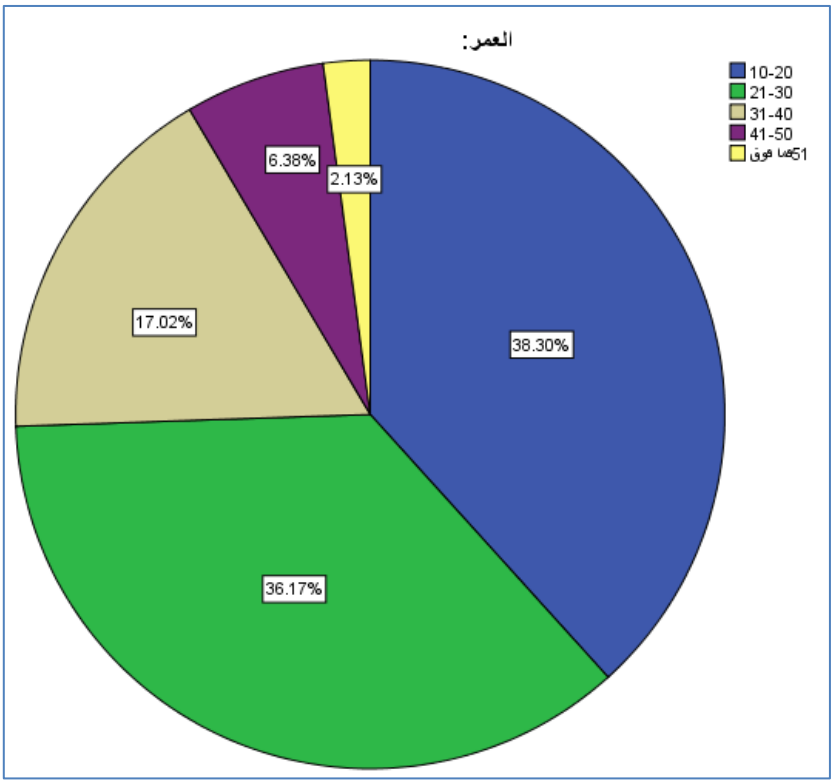


Figure (2): Distribution of the Study Sample by Age Group

This figure demonstrates that younger participants (aged 10–30 years) constitute the majority of the study population, indicating that most antibiotic users in the surveyed facilities were adolescents and young adults.

3. Hospitals and Clinics

Table (4): Distribution of the Study Sample by Hospitals and Clinics

Hospital / Clinic	Frequency	Percentage (%)
Tarhuna Teaching Hospital	23	47.9
Balj Clinic	13	27.1
Taiba Clinic	6	12.5
Al-Safaa Clinic	5	10.4
Other	1	2.1
Total	**48**	**100.0**

Table (4) shows the distribution of the study sample according to hospitals and clinics. It is evident that Tarhuna Teaching Hospital accounted for the largest proportion, with 23 participants (47.9%) of the total sample. It is followed by Balj Clinic with 13 participants (27.1%), Taiba Clinic with 6 participants (12.5%), and Al-Safaa Clinic with 5 participants (10.4%). One case (2.1%) was categorized under *Other*.

This figure demonstrates that Tarhuna Teaching Hospital hosted nearly half of the participants, highlighting its central role in the study, while the remaining proportion was distributed among private inpatient clinics in the city

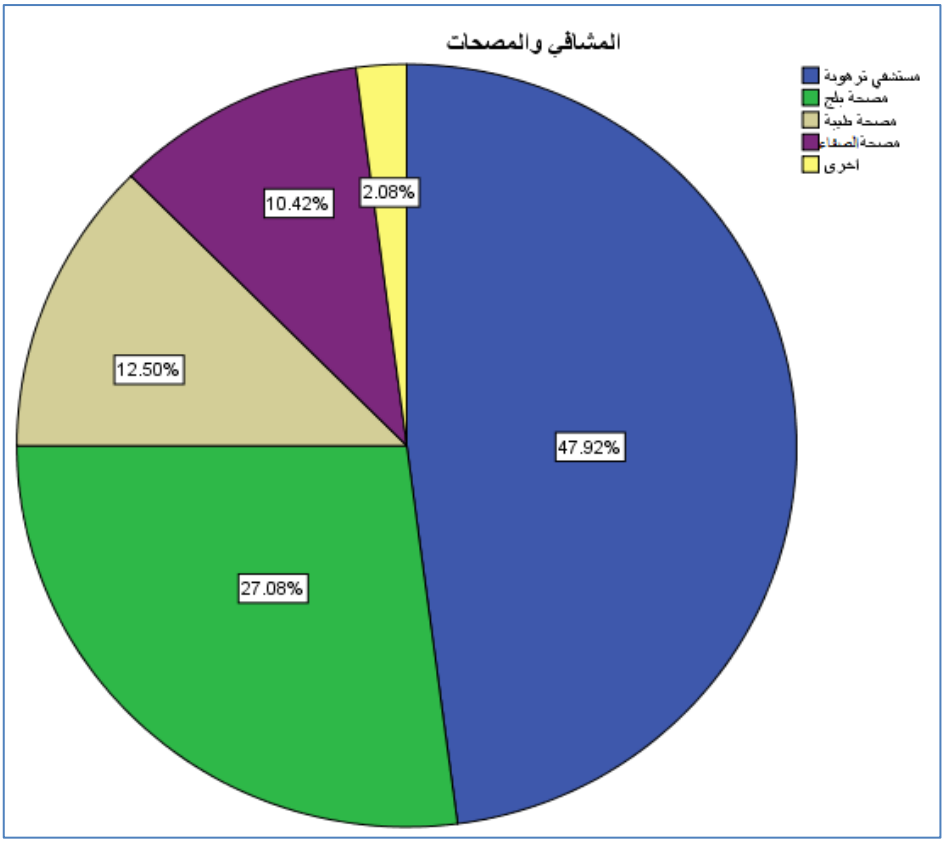


Figure (3): Distribution of the Study Sample by Hospitals and Clinics

5. Duration of Stay in the Hospital or Clinic

Table (5): Distribution of the Study Sample by Duration of Stay.

Duration of Stay	Frequency	Percentage (%)
1–2 days	24	50.0
3–4 days	13	27.1
5–6 days	3	6.3
More than a week	3	6.3
Missing	5	10.4
Total	**48**	**100.0**

Table (5) shows that half of the participants (50.0%) had a short hospital or clinic stay of 1–2 days, while 27.1% stayed between 3 and 4 days. In contrast, smaller proportions were observed among those whose stay exceeded four days, with 6.3% for each of the 5–6 days and more than a week categories. Additionally, five cases (10.4%) were recorded as missing data.
This distribution reflects the variation in hospitalization periods and the differing levels of treatment required among participants.

The figure illustrates that most participants had short-term hospitalizations, indicating that antibiotic-related treatments were generally administered over brief periods.

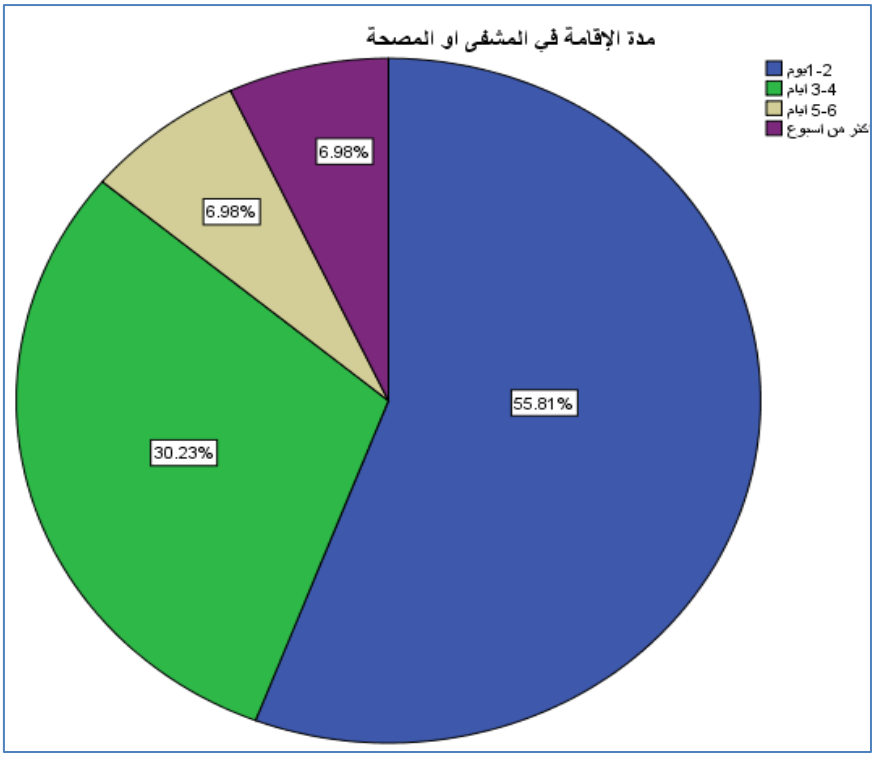


Figure (4): Distribution of the Study Sample by Duration of Stay

5. Severity of Reported Adverse Effects

Table (6): Distribution of the Study Sample by Severity of Reported Adverse Effects

Severity of Adverse Effect	Frequency	Percentage (%)
Mild	19	39.6
Severe	12	25.0
Missing	17	35.4
Total	**48**	**100.0**

Table (6) presents the distribution of participants according to the severity of the adverse effects experienced. The results indicate that 19 participants (39.6%) reported mild side effects, while 12 participants (25.0%) experienced severe adverse effects. Additionally, 17 cases (35.4%) were recorded as missing data, either due to incomplete responses or lack of noticeable symptoms.

This distribution highlights the variability in reported side effect intensity among participants, suggesting differences in drug response and individual tolerance levels.

The figure shows that mild adverse reactions were the most commonly reported, whereas severe effects were less frequent, emphasizing that while antibiotics are generally safe when used appropriately, a notable portion of users still experience significant side effects.

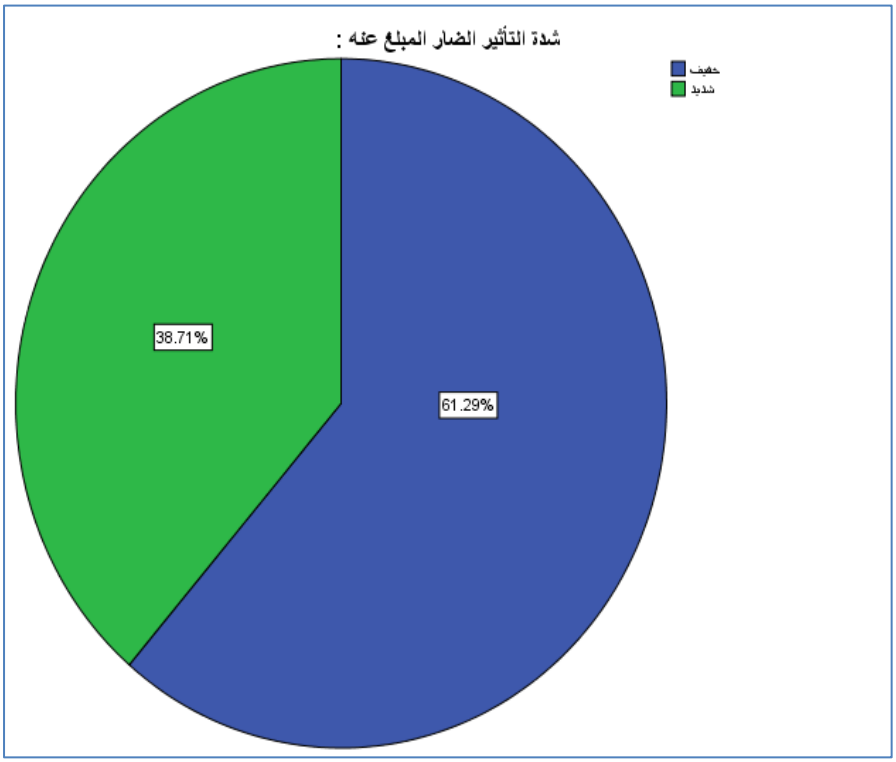


Figure (5): Distribution of the Study Sample by Severity of Reported Adverse Effects

Descriptive Analysis of the Study Sample According to the Type of Antibiotic Associated with the Adverse Effect

Table (7): Distribution of the Study Sample by Type of Antibiotic Associated with the Adverse Effect

Type of Antibiotic	Frequency	Percentage (%)
Penicillin	14	29.2
Cephalosporin	4	8.3
Vancomycin	2	4.2
Ketolide	3	6.3
Aminoglycoside	3	6.3
Tetracycline	2	4.2
Other	20	41.7
Total	**48**	**100.0**

This analysis presents the distribution of the study sample based on the type of antibiotic associated with reported adverse effects. The data demonstrate the diversity of antibiotics used and their varying impact among participants.

Penicillin appears as the most frequently used antibiotic, accounting for 14 cases (29.2%). Its broad effectiveness against various bacterial infections explains its frequent prescription and widespread clinical use.

Cephalosporins rank second, with 4 cases (8.3%) linked to adverse effects. This antibiotic class is commonly used to treat bacterial infections but appears less prevalent than penicillin in the studied sample.

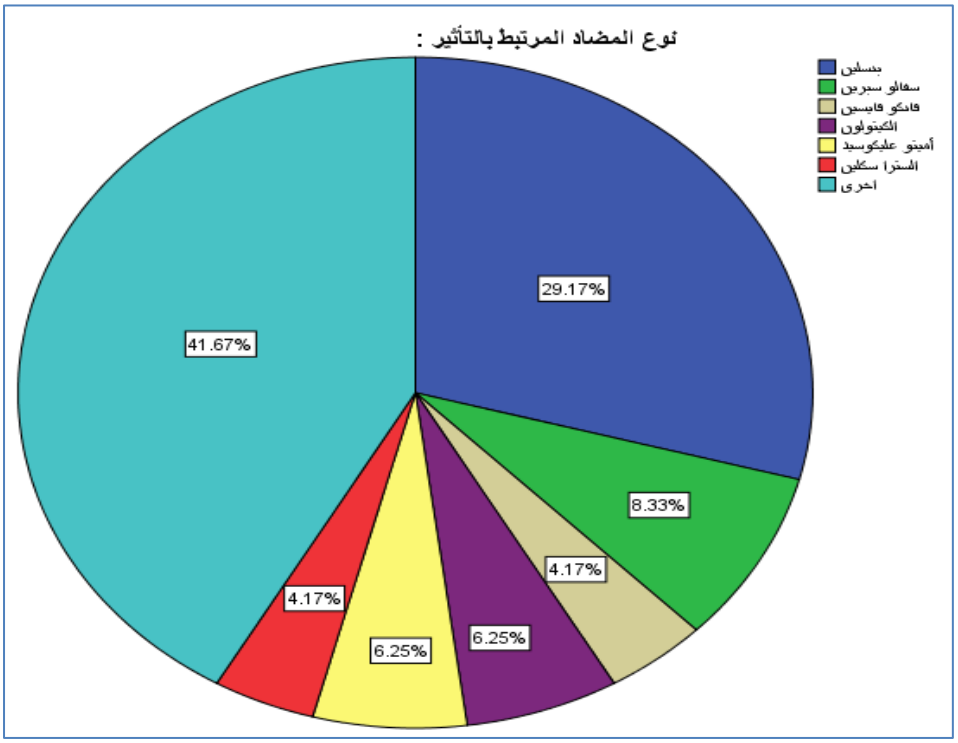
Vancomycin was associated with 2 cases (4.2%), typically used to treat infections resistant to penicillin, which justifies its limited representation in this dataset.

Both Ketolides and Aminoglycosides were each linked to 3 cases (6.3%), reflecting their targeted use for specific infection types or patient responses to therapy.

Tetracycline was reported in 2 cases (4.2%), consistent with its role as a secondary treatment option for various infections rather than a first-line antibiotic.

The category “Other” accounted for 20 cases (41.7%), representing the largest portion of the sample. This indicates a significant diversity of antibiotics prescribed, possibly reflecting differences in treatment protocols, infection types, or individual patient responses.

This analysis underscores the importance of understanding the variety of antibiotics in use and their corresponding side effects. Such insights are crucial for improving treatment strategies, optimizing antibiotic prescriptions, and enhancing the quality of healthcare. The unequal distribution of antibiotic types may reflect physicians’ preferences or existing hospital prescribing patterns—an aspect that warrants further investigation to identify underlying factors influencing antibiotic selection.



Descriptive Analysis of the Study Sample According to the Type of Reported Adverse Effect.

Table (8): Distribution of the Study Sample by Type of Reported Adverse Effect

Type of Reported Adverse Effect	Frequency	Percentage (%)
Skin Rash	2	4.2
Shortness of Breath	9	18.8
Low Blood Pressure	2	4.2
Headache	8	16.7
Gastrointestinal Symptoms	6	12.5
No Symptoms	20	41.7
Other	1	2.1
Total	**48**	**100.0**

Table (8) presents the distribution of participants according to the **type of adverse effect** reported. This analysis highlights the variety of symptoms experienced by the participants, providing insights into the potential side effects associated with antibiotic use.

Analysis of Antibiotic-Related Adverse Effects

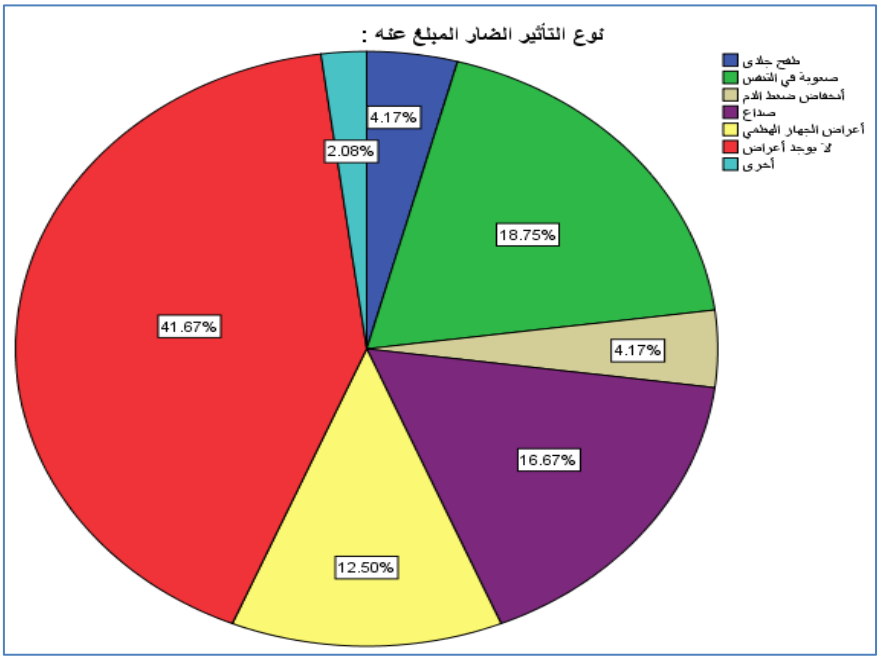
Skin Rash:

Only two cases (4.2%) of skin rash were recorded. This symptom is a known side effect of certain antibiotics, but its low occurrence in this study suggests that it is relatively uncommon among the participants.

Shortness of Breath:

This was among the most frequently reported side effects, recorded in nine cases (18.8%). Such a finding underscores the need for caution, as shortness of breath may indicate a serious allergic reaction or a severe drug interaction that requires immediate medical intervention.

Low Blood Pressure:
Only two participants (4.2%) reported low blood pressure, making it a rare reaction. However, when it occurs, it may lead to serious complications if not promptly diagnosed and managed.
Headache:
A total of eight participants (16.7%) reported headaches. This side effect is relatively common with many medications and may be linked to the antibiotic's effect on the central nervous system or the body's physiological response to infection and treatment.
Gastrointestinal Symptoms:
Six cases (12.5%) involved gastrointestinal issues such as nausea, vomiting, and stomach discomfort. These effects are well-documented with antibiotic use, particularly when taken on an empty stomach or over extended treatment periods.
No Symptoms:
Interestingly, **twenty participants (41.7%)** did not report any side effects. This finding suggests that a significant proportion of patients tolerated the antibiotics well, indicating a generally good drug safety profile in most cases.
Other Effects:
One participant (2.1%) reported an unspecified side effect categorized as "other." This could be attributed to individual differences or unique physiological responses and therefore cannot be generalized to the broader population.
These results reveal noticeable variability in both the nature and severity of side effects among patients. They underscore the importance of continuous pharmacovigilance to minimize the risk of severe reactions—particularly respiratory and cardiovascular complications—and to ensure safe antibiotic therapy. Future studies are recommended to explore individual factors influencing patients' responses to antibiotics, thereby supporting more personalized and safer treatment approaches.



Descriptive Analysis of the Study Sample According to the Management of Reported Antibiotic Side Effects

Table (9): Distribution of the Study Sample by Management of Reported Side Effects

Management of Reported Side Effects	Frequency	Percentage (%)
Discontinuation of the medication	35	72.9
Continued medication use	13	27.1
Total	**48**	**100.0**

Table (9) illustrates the distribution of the study sample according to how participants managed the side effects they experienced from antibiotic use. This analysis reflects the behavioral responses and decision-making patterns of patients when facing adverse drug reactions.

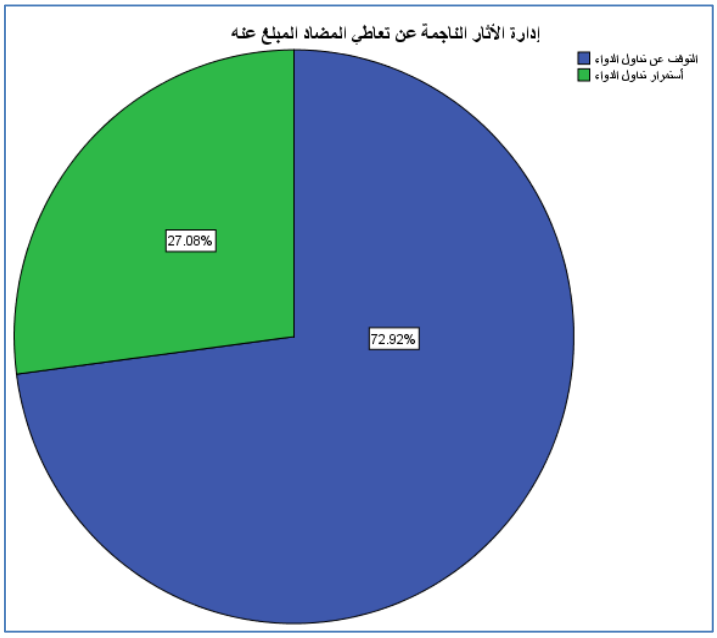
Discontinuation of the Medication:

The data show that 35 participants (72.9%) chose to discontinue the medication upon experiencing side effects. This high percentage indicates that most patients tend to stop antibiotic treatment when negative symptoms appear. Such behavior may stem from anxiety about potential complications, insufficient medical guidance, or a low tolerance for drug-related discomfort. The finding highlights a common issue in antibiotic adherence, which may compromise treatment effectiveness and contribute to bacterial resistance if not properly addressed.

Continuation of the Medication:

Conversely, 13 participants (27.1%) continued taking the antibiotic despite experiencing side effects. This suggests that some patients maintained confidence in the medication's therapeutic value or that their symptoms were mild and tolerable. It may also reflect a better understanding of the treatment course or stronger physician–patient communication regarding expected side effects.

Overall, the results indicate that most participants preferred to discontinue antibiotic use upon experiencing adverse effects, emphasizing the critical role of effective communication between healthcare providers and patients. Medical professionals should actively educate patients about possible side effects, provide clear guidance on which symptoms warrant discontinuation, and ensure proper follow-up care to prevent treatment interruption or misuse.



Results

1. The findings revealed that male participants constituted 54.2%, compared to 43.8% females, indicating a higher male representation within the study sample.
2. The 10–20 age group was the most represented, comprising 37.5% of participants, followed by the 21–30 group (35.4%), reflecting that most participants were young adults.
3. Tarhuna Teaching Hospital ranked first among the health institutions included in the study, accounting for 47.9% of participants, suggesting that the majority received their treatment there.
4. About half of the participants (50.0%) reported a hospital stay not exceeding two days, indicating that most cases were short-term.
5. Mild side effects were the most common, reported by 39.6% of participants, while 35.4% of cases were unrecorded or missing.
6. Penicillin was the most frequently used antibiotic (29.2%), followed by the "Other" category (41.7%), indicating the diversity of antibiotics administered.
7. 41.7% of participants reported no adverse symptoms, while shortness of breath was the most common side effect (18.8%).
8. 72.9% of participants discontinued their antibiotic treatment due to side effects, reflecting a high level of concern regarding the safety of these drugs.

Comparison of Findings with Previous Studies

1. Gender and Age Representation:
   The current study showed higher male participation (54.2%) and greater representation of the 10–20 age group (37.5%), aspects not explicitly covered in previous research. This adds a valuable demographic dimension to the existing literature on antibiotic use in Libya.
2. Adverse Effects:
   The findings align with previous studies that reported common side effects such as diarrhea and skin rash. The study also reaffirmed the presence of notable patient anxiety concerning antibiotic use, which often leads to premature discontinuation of treatment.
3. Geographic and Institutional Factors:
   This study highlighted the dominant role of Tarhuna Teaching Hospital (47.9%), unlike earlier research that focused on cities such as Tripoli, Sebha, and Zliten without comparing institutional preferences. This distinction adds geographic depth to the analysis of healthcare behaviors.
4. Treatment Discontinuation:
   The study found that 72.9% of participants discontinued antibiotic use due to adverse effects, consistent with previous research linking misuse and overuse to higher rates of bacterial resistance and health complications.

Recommendations

1. Enhance public health awareness regarding the potential side effects of antibiotics and safe management practices.
2. Establish a patient follow-up system to monitor adverse effects and ensure early intervention.
3. Encourage physicians to individualize treatment based on each patient's medical history to maximize safety and reduce complications.
4. Support future studies investigating factors influencing antibiotic selection and its effects on different age groups.

5. Urge patients to report any adverse effects immediately to improve the quality of therapeutic care.
6. Provide psychological and advisory support for patients experiencing severe side effects to aid in appropriate treatment decisions.
7. Strive to improve the quality of healthcare services within hospitals and clinics to ensure comprehensive and safe medical care.

Conclusion

The study confirmed that irrational antibiotic use remains a significant public health challenge, with side effects ranging from digestive disturbances and organ damage to allergic reactions, alongside the alarming escalation of antibiotic resistance.

It also demonstrated that a substantial proportion of patients discontinue treatment upon experiencing adverse effects, reflecting low health awareness and insufficient medical follow-up.

The research concludes with an urgent call to enforce rational antibiotic-prescribing policies, expand public education programs on safe antibiotic use, and support further research to develop safer and more effective therapeutic alternatives that enhance the overall quality of healthcare delivery.

استمارة الاستبيان
وزارة التعليم التقني والفني
المعهد العالي الأهلي للعلوم الطبية ترهونة
استمارة
أخي الفاضل/أختي الفاضلة
السلام عليكم .... وبعد التحية الطيبة:

يشرفني أن أضع بين أيديكم هذا الاستبيان كأداة لجمع المعلومات المتعلقة بدراستنا لاستكمال متطلبات الحصول على درجة الدبلوم العالي في تخصص الصيدلة من خلال دراسة موضوع:
تقييم الآثار الجانبية لاستخدام المضادات الحيوية: دراسة ميدانية في مستشفى ترهونة التعليمي وبعض مصحات المدينة الإوائية ودورها في تعزيز الممارسات العلاجية الرشيدة
نرجو منكم التكرم والإجابة على الأسئلة .... وشكرا لتعاونكم

أولا: المعلومات الشخصية
يرجى التكرم بالإجابة بوضع علامة () في الخانة المناسبة.
1-الجنس: ذكر () أنثى( )
2-العمر:10-0( ) 10-20 ( ) 21-30 ( ) 31-40 ( ) 41-50 ( ) 51ما فوق( )
3-المشافي والمصحات:
( )مستشفى ترهونة التعليمي.
( )مصحة بلج
( )مصحة الصفاء
( )مصحة طيبة
4-مدة الإقامة في المستشفى أو المصحة
1-2 يوم( ) 3-4يوم( ) 5-6يوم( ) أكثر من أسبوع( ).
5-شدة التأثير الضار المبلغ عنه:
( ) خفيف ( ) شديد.
6-نوع المضاد المرتبط بالتأثير الضار:
( ) البنسلين

( ) سفالو سبرين
( ) فانكو فايسين
( ) الكيتولون
( ) أمينو غليكوسيد
( ) إسترا سكلين
( ) أخرى (.....).

7-نوع التأثير الضار المبلغ عنه:
() طفح جلدي ( )صعوبة فالتنفس ( )انخفاض ضغط الدم ( )صداع ( )أعراض الجهاز الهضمي ( )أخرى.

8-إدارة الأثار الناجمة عن تعاطي المضاد المبلغ عنه:
() التوقف عن تناول الدواء.
() استمرار تناول الدواء.

المراجع:

1- ديفيدسن، ج.، وآخرون .(2023) .الآثار الجانبية للأدوية: التركيز على المضادات الحيوية .مجلة الطب الباطني، 12(4)، 45-67.
2- فليمنغ، أ .(2021) .تاريخ تطور المضادات الحيوية وتأثيرها على الصحة العامة .مجلة العلوم الطبية، 15(8)، 123-145.
3- سميث، ر.، وجونز، ك .(2022) .الميكروبيوم وتأثير المضادات الحيوية على صحة الأمعاء .مجلة الأبحاث البيولوجية، 10(3)، 78-102.
4- منظمة الصحة العالمية .(2020) .التقارير العالمية حول مقاومة المضادات الحيوية .جنيف، سويسرا.
5-الطبي .(2024) .تأثير سوء استخدام المضادات الحيوية في مستشفيات طرابلس.
الدراسة تناولت الآثار السلبية لسوء استخدام المضادات، مثل زيادة المقاومة البكتيرية وتأثيرها على الجهاز المناعي والجهاز الهضمي.
6-جامعة سبها .(2024) .أنماط مقاومة المضادات الحيوية في مستشفيات سبها.
دراسة تسلط الضوء على تأثير الاستخدام المفرط للمضادات على صحة المرضى.
7-المؤتمر العلمي السنوي بجامعة الأزهرية .(2024) .تقييم مضاعفات المضادات الحيوية لدى الأطفال في مستشفى زليتن.
8- الحسيني، محمد .(2021) .الاستخدام الأمثل للمضادات الحيوية .مجلة العلوم الطبية، العدد 12.
9- الجبوري، أحمد .(2020) .الآثار الجانبية الشائعة للمضادات الحيوية .مجلة الصحة والدواء، المجلد 8.
10- السليمان، خالد .(2019) .مقاومة المضادات الحيوية وأثرها على الصحة العامة .دار النشر العربية.
11-منظمة الصحة العالمية .(2022) .*الاستخدام العقلاني للمضادات الحيوية* .جنيف، سويسرا
12-موسى، هدى .(2021) .التأثيرات الجانبية للمضادات الحيوية وطرق الوقاية منها .مجلة الطب الحديث، العدد 4.
13- عبد العزيز، محمد .(2019) .المضادات الحيوية واستخداماتها .دار الفكر العربي، القاهرة.
14-إسماعيل، أحمد .(2020) .الصيدلة السريرية - الدليل العملي .دار العلم للنشر، بيروت.
15-زيدان، سامي .(2018) .الطب الوقائي والأدوية المضادة للعدوى .مكتبة النهضة العربية، عمان.
16- عيسى، عبد الرحمن .(2021) .علم الأدوية السريري .دار المعارف الطبية، الرياض.
17-عبد الله، علي .(2023) .التوجهات الحديثة في علاج مقاومة المضادات الحيوية .دار الشروق للنشر، القاهرة.
18-الحسن، فاطمة .(2022) .الاستخدام الآمن للمضادات الحيوية في الأطفال .مجلة الصيدلة الإكلينيكية، 10(2)، 45-60.
19-منظمة الصحة العالمية .(2023) .مبادئ توجيهية للاستخدام الرشيد للمضادات الحيوية في المستشفيات .جنيف، سويسرا.
20-سالم، محمود .(2021) .التحديات الصحية الناتجة عن الإفراط في استخدام المضادات الحيوية .مجلة الطب الوقائي، 15(4)، 30-45.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no conflict of interest.