

مدرسة الصحة العامة الفلسطينية
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**ANTIBIOTIC RESISTANCE OF BACTERIA ASSOCIATED WITH
COMMUNITY-ACQUIRED URINARY TRACT INFECTION
AMONG ADULTS IN SOUTHERN GAZA STRIP**

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A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of
Master in Public Health at Al-Quds University

August 2000

Endorsement

Thesis title

ANTIBIOTIC RESISTANCE OF BACTERIA ASSOCIATED WITH
COMMUNITY-ACQUIRED URINARY TRACT INFECTION AMONG
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DEDICATION

TO MY FAMILY-----

FRIENDS-----

COLLEAGUES-----

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ACKNOWLEDGEMENT

I hereby acknowledge with sincerest thanks the Minister of Health **Dr. Riyad Al Zanoun** and the Director General of the Ministry of Health **Dr. Imad Tarwea**. Thanks and appreciation are also extended to **Dr. Fadel A. Sharif** for his advice, kind help and endless support.

I would like also to express my sincere gratitude to the Dean of Palestinian School of Public Health **Dr. Yehia Abed**, **Dr. Mazen El-Saka**, **Mr. Abdelraouf A. ElManama**, **Dr. Randa El-Khudary**, **Dr. Suzanne Shasha'a**, **Dr. Riyad Awad**, **Mr. Samir Safi** and **Mr. Abed Al-Rahman Al-Hour** for their great advice and guidance they gave to me throughout this work.

I wish to express my appreciation and gratitude to all colleagues and partners who have contributed in the production of this document. My most profound gratitude to my colleagues at Laboratory Directorate, Ministry of Health and Palestinian School of Public Health. Special thanks are extended to my colleagues **Mohammed Khamis**, **Jehad Audwan**, **Jum'a El-Maniarawy**, **Shaa'er Abu Khadra** and **Aida Khudir** at Khan Younis Hospital Laboratory.

My thanks are extended to all those not mentioned in person and who contributed in any way during this research. I wish all of them a long and prosperous life.

ABSTRACT

The present work is a cross sectional study, which was conducted at Khan Younis Hospital Laboratory-Gaza Strip-Palestine, in the year 2000. The aim of this study was to identify the bacteria that causes community-acquired Urinary Tract Infections (UTIs) among adults and to investigate their resistance-profiles to the fourteen selected antimicrobial agents which are in common use for treatment of UTI. A questionnaire was used to collect data from 270 outpatients and inpatients with community-acquired UTI. The collected data were discussed in terms of their effects on the outcomes of the study. The uropathogens identified in this study were *Escherichia coli* (57.9%), *Proteus* species (9.9%), *Enterobacter* species (7.4%), *Klebsiella* species (6.6%), *Pseudomonas* species (5.8%), *Staphylococcus saprophyticus* (5.0%), *Enterococcus* species (3.3%), *Acinetobacter* species (2.5%), *Citrobacter* species (0.8%) and *Staphylococcus aureus* (0.8%). All the isolates were subjected to antimicrobial susceptibility by the modified Kirby-Bauer disc diffusion technique on Mueller Hinton agar plates. Our results indicated that, a high proportion of the isolates was resistant to amoxicillin (73.6%), doxycycline (68.6%) and trimethoprim-sulfamethoxazole (66.1%). On the other hand, the most effective antimicrobial agents against all isolated uropathogens were ciprofloxacin (95.9%) followed by amikacin (95.0%) and ceftazidime (94.2%). In the present study, a high percentage of multiple-drug resistance was observed for the majority of the isolated bacteria. The sensitivity of *E. coli*, for instance, to all the tested drugs was only 2.9%, while the resistance was 47.1% to at least four of them. We emphasize the importance of periodic monitoring of the frequency and antimicrobial susceptibility of uropathogens in order to document such changes, the collected data would then serve as a basis for empirical therapy to UTI. Also, there is little justification for treating UTI routinely with newer, more expensive and broad-spectrum agents such as fluoroquinolones.

KEY WORDS: Gaza Strip, Antibiotic, Resistance, Urinary Tract Infection.

ملخص

مقاومة المضادات الحيوية لدى البكتيريا المسببة لالتهاب المجاري البولية المكتسب

من المجتمع عند البالغين في جنوب قطاع غزة

تم إجراء هذه الدراسة في مختبر مستشفى خان يونس بقطاع غزة - فلسطين خلال عام 2000، وكان الهدف منها تحديد أنواع البكتيريا المسببة لالتهاب المجاري البولية المكتسب من المجتمع عند البالغين ومدى مقاومتها لأربعة عشر نوعاً من العلاجات المدرجة في الدراسة والتي عادة ما تستخدم في علاج تلك الالتهابات. وقد تم استخدام استبيان لجمع البيانات من 270 مريضاً بالتهاب المجاري البولية المكتسب من المجتمع والمحولين من قبل الأطباء المختصين، حيث استخدمت تلك البيانات في إطار تحليل نتائج الدراسة. وقد وجد أن نسبة انتشار البكتيريا المسببة لالتهاب المجاري البولية في هذه الدراسة كالتالي: *Escherichia coli* (57.9%) و *Proteus species* (9.9%) و *Enterobacter species* (7.4%) و *Klebsiella species* (6.6%) و *Pseudomonas species* (5.8%) و *Staphylococcus saprophyticus* (5.0%) و *Enterococcus species* (3.3%) و *Acinetobacter species* (2.5%) و *Citrobacter species* (0.8%) و *Staphylococcus aureus* (0.8%).

وقد أخضعت جميع البكتيريا المعزولة لفحص مدى حساسيتها للمواد العلاجية بطريقة الانتشار من أقراص تحتوي على تلك المواد باستخدام أطباق آجار (Mueller Hinton).

أظهرت نتائج هذه الدراسة وجود نسبة كبيرة من أنواع البكتيريا المعزولة مقاومة للمواد العلاجية التالية: الأموكسيسيلين (73.6%) و الدوكسيسايكلين (68.6%) و الترياميثوبريم-سلفاميثوكسازول

(66.1%)، بينما كان السيروفلو كساسين أكثر المركبات العلاجية فاعلية تجاه جميع الميكروبات حيث وجدت نسبة الحساسية له 95.9% يليه الأميكاسين بنسبة 95.0% ثم السيفتازاديم بنسبة 94.2%. كما لوحظ في هذه الدراسة وجود نسبة عالية من المقاومة المتعددة للمواد العلاجية بين جميع أنواع البكتيريا المعزولة، فعند أخذ *E. coli* كمثال على المقاومة المتعددة نجد أن 2.9% فقط من هذه البكتيريا أبدت حساسية لكل المواد العلاجية المستخدمة، بينما أظهرت 47.1% منها مقاومة لأربعة مواد على الأقل.

وبناءً على النتائج المذكورة فلا بد من التأكيد على ضرورة الاستمرار في عمل الدراسات و الأبحاث في منطقتنا بين الحين و الآخر لمعرفة أنواع البكتيريا المسببة لالتهاب المجاري البولية ومدى حساسيتها للمواد العلاجية و ذلك من أجل علاج أفضل لتلك الالتهابات، و لتحديد العلاجات المبدئية التي يمكن استخدامها إلى حين ظهور نتيجة المزرعة، ولتقليل فرص زيادة نسبة المقاومة لهذه العلاجات في المجتمع مع وضع سياسات دوائية وطنية تتوافق مع نتائج تلك الدراسات و الأبحاث و عدم التركيز على استخدام العلاجات الجديدة و الأكثر تكلفة مثل الفلوروكنولينات.

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LIST OF ABBREVIATIONS

API	Analytical Profile Index
CFU	Colony-Forming Unit
cm	Centimeter
DNA	Deoxyribonucleic Acid
DNase	Deoxyribonuclease
HPF	High Power Field
I	Intermediate
IUD	Intra-Uterine Device
KYHIL	Khan Younis Hospital Laboratory
MDR	Multiple-Drug Resistant
MIC	Minimum Inhibitory Concentration
ml	Milliliter
MOH	Ministry of Health
Na Cl	Sodium Chloride
NCCLS	National Committee for Clinical Laboratory Standards
NGOs	Non-Governmental Organizations
No.	Number
PCBS	Palestinian Central Bureau of Statistics
PHC	Primary Health Care
R	Resistant
RCF	Relative Centrifugal Force
RNA	Ribonucleic Acid
S	Sensitive

SPSS	Statistical Package for the Social Sciences
TMP-SMZ	Trimethoprim-Sulfamethoxazole
U	Unit
UK	United Kingdom
UNRWA	United Nations for Relief and Working Agency
US	United States
UTI	Urinary Tract Infection
WHO	World Health Organization

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