

Antibiotics Prescription Patterns In Primary Health Care In Qatar – A Population Based Study From 2017 To 2018

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Background

Antibiotics are antimicrobial drug used in the treatment and prevention of bacterial infections. They played a pivotal role in achieving major advances in medicine and surgery (1). Yet, due to increased and inappropriate use of antibiotics, antibiotic resistance (AR) has become a growing public health problem. Information on antibiotic prescription patterns are vital in developing a constructive approach to deal with growing antibiotic resistance (2).

The study aims to describe the population based antibiotic prescriptions among patients attending primary care centers in Qatar.

Subjects, Materials & Methods

Design: A population based observational study of all medications prescribed in the all Primary Health Care Center during the period of 2017-2018 in Qatar.

Setting: Records with all medication prescriptions were extracted from PHCC Medical Record (CERNER) and linked to medical diagnosis. Antibiotics prescriptions records were compared to non- antibiotics records using logistic regression model in identifying the potential predictors for antibiotic prescriptions.

Results :

A total of 11,069,439 medication prescriptions over the two-year we found about 12.1% (n= 726,667) prescriptions were antibiotics, and 65% of antibiotics are prescribed and received by the patients at the first visits. We found that male was 29% more likely be given an antibiotic compared to female (OR=1.29, 95% CI= 1.24- 1.33) (Table1). Paracetamol (22.3%) was the first highest medication prescribed followed by antibiotics (12.1 %) and vitamin D2 (10.2 %) (Table 2). More than half of all antibiotics prescribed during the period of January 2017 to December 2018 were Penicillin (56.9%) (Table 3). We found that half of the antibiotics (49.3 %) been prescribed for the respiratory system comparing to the other body system (Table 4).

Table 1: Demographic Characteristics of the Participants

| | Number of Patients | Antibiotic prescription n | Proportion Prescribed % | OR (95% CI) | P value |
|--------------------|--------------------|---------------------------|-------------------------|------------------|---------|
| Overall | 178,694 | 20,007 | 11.2 | | |
| Gender | | | | | |
| Male | 83,134 | 10,168 | 12.2 | 1.25 (1.20-1.29) | <0.001 |
| Female | 95,560 | 9,839 | 10.3 | Reference | |
| Nationality | | | | | |
| Qatari | 53,775 | 6,219 | 11.6 | 1.01 (0.96-1.04) | 0.98 |
| Non-Qatari | 124,919 | 13,788 | 11.1 | Reference | |
| Age group | | | | | |
| <18 years | 45,151 | 2,763 | 6.1 | Reference | |
| 18-45 years | 86,496 | 10,918 | 12.6 | 1.55(1.47-1.63) | <0.001 |
| >45 | 56,114 | 6,326 | 11.3 | 1.28(1.21-1.36) | <0.001 |

Table 2: Top 5 Medications Prescribed in PHCC Health Centers

| Medication | Frequency | Percentage (%) |
|------------------------------|----------------|----------------|
| Paracetamol | 1,347,266 | 22.3 |
| Antibiotics | 726,660 | 12.1 |
| Ergocalciferol (Vitamin D2) | 615,618 | 10.2 |
| Ibuprofen | 445,157 | 7.4 |
| Cholecalciferol (Vitamin D3) | 302,020 | 5.1 |

Table 3: Antibiotic Prescription per Antibiotic's Classes

| Antibiotics Class | Frequency | Percentage |
|-------------------|----------------|-------------|
| Penicillin | 413,184 | 56.9 |
| Macrolide | 123,351 | 17.1 |
| Cephalosporin | 74,588 | 10.3 |
| Nitroimidazoles | 52,330 | 7.2 |
| Chloramphenicol | 27,276 | 3.8 |
| Fluoroquinolones | 17,196 | 2.4 |
| Tetracycline | 11,596 | 1.6 |
| Nitrofurantoin | 8,786 | 1.2 |

Table 4: Antibiotics Prescription By Body System

| Body System | Frequency | Percentage (%) |
|--------------------|----------------|----------------|
| Respiratory | 357,956 | 49.3 |
| Dental | 108,015 | 14.9 |
| Skin and wound | 85,764 | 11.8 |
| Urogenital | 65,982 | 9.1 |
| Digestive | 40,655 | 6.3 |
| Other body System | 45,560 | 5.6 |
| Not Diagnosis | 22,730 | 3.1 |

Implications :

The study provides a baseline data to enable PHCC management to design effective intervention program to address the problem of antibiotics resistance. Furthermore, it will help the policymakers to comprehend the size of the issue and develop a system to manage the antibiotics therapy.

Conclusions :

Antibiotics was the second highest medication prescribed in the Primary Health Care Centers in Qatar after the paracetamol and most of the patients received it at the first visit. Most of the prescriptions in primary health care centers in Qatar were for the respiratory system, and Penicillin was the highest class prescribed. Male visitors were prescribed antibiotics more than female visitors.

References :

- Gould IM, Bal AM. New antibiotic agents in the pipeline and how they can help overcome microbial resistance. *Virulence*. 2013;4(2):185-91.
- Piddock LJ. The crisis of no new antibiotics--what is the way forward? *The Lancet Infectious diseases*. 2012;12(3):249-53.