

Misuse of antibiotics in Iraq: A review of Iraqi published studies

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Article Info:

Received 15 Feb 2021

Accepted 9 May 2021

Published 1 Jun 2021

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atheer.sabah@albayan.edu.iq[orcid: https://orcid.org/0000-0001-9593-0515](https://orcid.org/0000-0001-9593-0515)**Abstract**

Misuse of antibiotics is one of the health problems worldwide. In Iraq, prevalence of self-medication with antibiotics increases resistant organisms, this will lead to bad impacts on health and economic aspects in the future. Aim of study is to review the published articles on the antibiotics misuse in Iraq, in

addition to assess the level of the population's knowledge towards antibiotics misuse and the suggested recommendation to reduce this problem. Method: In this study 12 articles conducted in different regions of Iraq were reviewed to assess antibiotic misuse in a period from 2014-2020. Results: The results demonstrated high prevalence of antibiotic misuse among Iraqi population ranging from (45%- 92%). In addition, poor knowledge among population towards antibiotics misuse also reported. Bad attitudes of pharmacists and physicians regarding antibiotics prescribing and dispensing were registered. Conclusion: The review focuses on important health issue in Iraq that effect on health & economic system. New legislations and restriction need to apply to limit this problem.

Key words: Antibiotics, Misuse, Iraq

مراجعة لسوء استخدام المضادات الحيوية في العراق
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الخلاصة:

سوء استخدام المضادات الحيوية هو احد المشاكل الصحية على مستوى العالم. وفي العراق انتشار المعالجة الشخصية بالمضادات الحيوية زاد من الاحياء المجهرية المقاومة مما يؤدي الى تبعات سلبية على جوانب الصحة والاقتصاد في المستقبل. هدف الدراسة هو مراجعة الاوراق البحثية المنشورة عن سوء استخدام المضادات الحيوية في العراق بالإضافة الى تقييم مستوى معرفة الناس بسوء استخدام المضادات الحيوية واقتراح توصيات لتقليل هذه المشكلة. طريقة البحث تناولت 12 ورقة بحثية اجريت بمناطق مختلفة من العراق تمت مراجعتها لتقييم سوء استخدام المضادات الحيوية للفترة من 2014 ولغاية 2020. بينت النتائج انتشار عالي لسوء استخدام المضادات الحيوية بين افراد المجتمع العراقي بمعدل من 45% الى 92% بالإضافة الى قلة المعرفة بسوء استخدام المضادات الحيوية بين افراد المجتمع. وقد سجلت مواقف سيئة تتعلق بوصف وصرف المضادات الحيوية من قبل الاطباء والصيداللة. وقد ركزت المراجعة على اهم الاصدارات الصحية في العراق التي تؤثر على النظام الصحي والاقتصادي مع الحاجة لضوابط جديدة وتقنين يطبق للحد من هذه المشكلة.

الكلمات المفتاحية: المضادات الحيوية – سوء الاستخدام – العراق.

Introduction

Antibiotics administration for a purpose not consistent with medical guidelines can lead to resistance towards wide range of pathogens and bacteria. This may lead to negative impact on health [1]. Misuse of antibiotics may be due to incomplete therapy, forgetting doses, re-use of leftover, or usage without prescription [2]. Self-medication, overuse, and misuse of antibiotics have been identified among the main factors for antimicrobial resistance (AMR). According to World Health Organization (WHO), AMR is the resistance of microorganism to antimicrobial agent to which it was originally sensitive [3]. The impact of AMR includes prolonged illness, more health facility visits, extended hospital stays, the need for more expensive medications, and even death [4]. Self-medication with antibiotics is a worldwide problem, not only in the developing countries but also in the developed countries [5]. Studies among Iraqi population have reported prevalence of improper use of antibiotic [6-14], this will lead to increase in the health problems.

Aim of study

The aim is to review the publisher articles concerning the prevalence and the level of participant's knowledge among population about antibiotics administration.

Literature review

The article searched 12 published studies about antibiotics use in different regions of Iraq in the period from 2014 -2020.

Results

Prevalence of antibiotics misuse in Iraq (Table1)

Concerning antibiotics dispensing in community pharmacies, previous study revealed that 45% of pharmacists dispensed antibiotics without prescription for common colds. In addition, more than

60 % of the pharmacist did not ask the patients about their symptoms, duration of treatment or if they were taking other medications [6].

Ahmed et al [7] found that 62.7% of Iraqi pharmacy students administered antibiotics as self-medication, although they were aware of bacterial resistance. Another cross-sectional study carried out in two Iraqi universities concluded that antipyretics and antibiotics were the most used medicines among 92.4% of students [8]. The prevalence of self-prescribed medicine among medical students in Anbar University showed that 49.6% of the participants used antibiotics without prescription [9].

A cross sectional study was conducted in Al-Samawa city to assess the prevalence of antibiotics self-medication for respiratory tract infections revealed that 76% of participants were using antibiotics without prescription [10]. Jasim AL et al [11] also reported that the prevalence of antibiotics among 260 patients in Baghdad city was 74.7%. A cross-sectional study was conducted among Iraqi community in Jordan identified that, 90% of participants answered that antibiotics were indicated for viral diseases and 62% of them were agreed to buy antibiotics without a prescription.

Overuse and misuse of antibiotics have also recorded in different teaching hospitals in Iraq. The prevalence of antimicrobial use was 83.3% among patients in Al-Hussain Teaching Hospital in Karbala, the survey found that physicians did not apply guidelines in antibiotics dispensing for treatment or prophylaxis purposes with limited use of culture and sensitivity tests [12]. Another study in Pediatric Teaching hospital in Baghdad revealed that high rate of receiving antibiotics among patients consulting the hospital. About all inpatients (99.9%) and 92.11% of the neonates were administered antibiotics [13].

Table (1): Studies of antibiotics misuse prevalence in Iraq

References	Year	Place	Number of participants	Prevalence %
Jasim AL <i>et al</i> (11)	2014	Baghdad	Patients (260)	74.7%
Mikhael EM (6)	2014	Baghdad	Pharmacists (20)	45%
Darwish DA <i>et al</i> (12).	2014	Jordan	Iraqi community (508)	62%
Obaid AAR <i>et al</i> (14)	2016	Baghdad	Pediatric Teaching Hospital (9440)	87.56%
AL-Saadi NT (10)	2016	Al-Samawa	Community based (200)	76%
Abu-tiheen AAK <i>et al</i> (13)	2017	Karbala	Al-Hussain Teaching Hospital (302)	83.3%
Al-Ameri <i>et al</i> (8)	2017	Baghdad	University students (1435)	92.4%
Al Shawi <i>et al</i> (9)	2018	Anbar	Medical students (400)	49.6%
Ahmed FT <i>et al</i> (7)	2019	Baghdad	Pharmacy students (344)	45%

Level of Knowledge toward antibiotics misuse among Iraqi population

A cross sectional study involving 500 participants attending outpatient department of university teaching hospital in Baghdad revealed prevalence of knowledge towards antimicrobial use was very low (15%), the knowledge level was associated with the education level of the participants [15].

A recent study by Mickhael *et al* [16] was conducted among final year pharmacy students at Baghdad University concluded that antibiotic knowledge among participants was very poor. In contrast, medical students in Al-Iraqia University showed good knowledge and positive attitude toward self-medication with antibiotics and other drugs [17].

The knowledge of the inhabitants of Al-Samawa city is not good enough and need further education on antibiotics and its usage (10). A study among Iraqis residing in Jordan concluded that there is poor knowledge towards antibiotic use and the

development of antimicrobial resistance [12].

A lack in effective communication between pharmacists and the patients in community pharmacies lead to irrational use of antimicrobial drugs according to results recorded by a survey conducted in Baghdad [6].

Recommendation and interventions for antibiotics misuse:

Previous studies have suggested recommendations to reduce antibiotics misuse which include the following

- 1- Focusing on the training of students in pharmacy colleges and update the scientific curriculum [17].
- 2- Regulation the purchasing of the antibiotics [8] and imposing strict policies by the authorities on pharmacies deal with use of antibiotics without prescription [7].
- 3- Pharmacies must engage in a mandatory continuous medical education programs

to improve and update their clinical and practice skills [6].

- 4- Disseminating the culture of proper antibiotics use by healthcare providers to raise public awareness and conducting public educational programs through mass media [14].
- 5- Educate health care by using seminars or any other educational means [10].

Discussion

In developing countries, the common cause of death is the infectious diseases which required treatment with antibiotics, however improper use of these medications lead to bacterial resistance that may cause health problems [18]. These problems also noticed in United states [19]. In a study in United Kingdom, it was predicted that by 2050 the mortality rate result from bacterial resistance more than rate recorded from cancer [20].

Antibiotics misuse prevalence was registered in Iraq and other countries worldwide and among different educational levels. A study in Jordan was reported that 35% of participants were used unprescribed antibiotics [21]. similarly, it was found that 41-92% of Saudi population administered antimicrobial drugs without prescriptions [22]. In Egypt, Prevalence of self- medication among medical students of Ain Shams University was 55%. One study in Romanian University recorded that 44% of students used antibiotics without prescription [23].

Regarding pharmacist's attitude towards antibiotics dispensing without prescription, several studies agree with results registered in Iraq. In Jeddah and Riyadh, antibiotics could be easily obtained without prescription [22]. In Jordan a study on 405 community pharmacists revealed that 94% believed that antibiotics were dispensed without a prescription by their staff [24].

Factors contributing to antibiotics misuse/overuse are several. These factors include socioeconomic, cultural, and educational variables [25]. Availability of drugs and advertisement exposure also

play a role in antibiotics misuse [7]. Moreover, patients can get their antibiotics online from different websites without medical diagnosis and a prescription [26]. Lack of strict rules and regulations concerning antibiotics dispensing or poor knowledge by pharmacists may encourage them to sell these drugs without prescription [27]. Misuse of antibiotics by pharmacy students can be attributed to misplaced self-confidence in their knowledge about medication [7].

Centers for disease control and prevention in the USA(CDC) and WHO have framed a guideline for dispensing antibiotics by physicians only when indicated [13]. Nevertheless, many physicians prescribe antibiotics for patients even if the patient has a viral infection for rapid relief, some physicians did not consider that regular prescription of antibiotics may cause AMR [26].

In Iraq, regardless of the strict guidelines for antibiotics administration from Iraqi ministry of Health (MOH), antibiotics like most other prescribed only medicines (POM) can be easily obtained without prescription, this result in high prevalence rate of self- medication with antibiotics [7].

Conclusion

The reviewed studies reported the prevalence of antibiotics misuse among Iraqi population with different educational levels. However, the studies concerning this important health problem are very limited in Iraq comparing to other neighboring countries such as Saudi Arabia and Jordan. In addition, a control of MOH is needed on the distribution and selling of antibiotics in community pharmacists and in public hospitals.

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