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Extended Abstract
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Pharma Sci-Assessment of Drug Prescribing in Jordan Using World Health Organization Indicators- Alaa R Alkhatib- Jordan Food and Drug Administration

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Introduction

Inappropriate prescribing of drugs is very common worldwide. Bad prescribing habits may lead to ineffective and unsafe treatment, exacerbation or prolongation of illness distress and harm to the patient, and increased costs

Changing existing prescribing habits is difficult. The WHO and the International Network of Rational Use of Drugs (INRUD) have developed a set of drug prescribing indicators to be used as measures of prescribing performance in primary care centers. Several well-established survey methods are available for this purpose

Prescribing indicators measure the general prescribing tendencies within a given setting, independent of specific diagnoses

The prescribing indicators include percentage of drugs prescribed by generic name, the percentage of prescriptions containing antibiotics, the percentage of prescriptions containing injections, the percentage of drugs prescribed from the national essential drug list and the average number of drugs prescribed per prescription. Drug prescribing by physicians in Jordan have been scarcely studied

Drug prescribing and use patterns by physicians and patients in Jordan have been scarcely studied. One study published in 2002 was found. The study was conducted in collaboration with the WHO and used the WHO indicators, namely, prescribing indicators, and patient care and health facilities indicators.

In 2014, a study was conducted by a group of researchers in Jordan titled ‘The evaluation of drug-prescribing patterns based on the WHO prescribing indicators in outpatient clinics of five hospitals in Jordan’ and showed a high average number of prescribed drugs per encounter and a low percentage of generic prescribing. In the present study, prescribing behavior has been assessed using the WHO recommended protocol

General Objective

To assess the health care professionals’ adherence to WHO prescribing guidelines and to identify areas in need for intervention regarding the rational use of medicines in Amman.

Specific Objectives

• To determine the average number of drugs per encounter.

• To determine the percentage of drugs prescribed by generic name.

• To determine the percentage of encounters with an antibiotic prescribed.

• To determine the percentage of encounters with an injection prescribed.

• To determine the percentage of drugs prescribed from essential drugs list or formulary in Amman primary health care centers

These WHO recommended indicators would be used to draw the attention of health professionals as well as health authorities and provide baseline data for any future corrective actions.

This work is partly presented at World Congress on Advances in Pharmaceutical Sciences

Methods

Ethical Considerations

Before the commencement of the study, ethical approval for the study protocol was obtained from the Ministry of Health in Jordan and the Institutional Review Board in Jordan University of Science and Technology. Since we are dealing only with prescrip tions, our study carries no harm to patients. We did not collect any identifying information and data were kept strictly confidential and used by the investigators only for scientific purposes.

Selection of Health Centers

Seven centers were selected out of the 70 primary health care centers in Amman based on their geographical distribution and accessibility. Cooperativeness of the staff of the centers, particularly the pharmacists was a factor in selection of these centers for the study. The centers were selected to represent the different geographical areas of Amman which, to an extent, reflects the range of socioeconomic variation in the city. Staffing differs from one center to another. Each health center is staffed by 2 or more physicians (general practitioners and family physicians) and at least 1 pharmacist and 2 or more assistant pharmacists. The selected centers were Shafa Badran and Abu-Nusair from North Amman, Tariq, Al-Marqab, and Al-Manarah from East Amman, Al-Zohour from South Amman and Al-Deraa from West Amman.

Data collection was carried out primarily by the researcher assisted by one pharmacist in each of the selected centers. Assistants were trained on the study procedures and forms by the researcher.

All data relevant to the present study were collected during the period from May 2017 to July 2017. All prescriptions in a given day at a given center were included in the study. We used the Jordan National Drug Formulary to find the essential drug list. Drugs were classified as an antibiotic or not based on WHO definition. The essential drug list of Jordan is used as a basis to determine drugs as generic or brand name. Work in each center continued until a predetermined number of prescriptions was reached. The targeted number of prescriptions from each center was 100 to 180 and needed 4 to 7 days to complete.

Sample Size Calculation

According to the manual “How to investigate drug use in health facilities”, at least 600 encounters should be included in a cross-sectional survey. A larger sample size would provide more precise estimates of the targeted indicators. Therefore, we decided to increase our sample size beyond the minimum required. It happened that the total number of prescriptions was 1055, which is well beyond the minimum recommended.

Data Management and Statistical Analysis

Data entry and analysis were conducted using SPSS version 20 we performed range and logical checks. Detected errors were corrected as appropriate. Prescribing indicators, overall and by health center, were obtained. Prescribing indicators by age were also obtained in order to assess any age-related patterns. The chi-square test was used to assess the statistical significance of observed differences for all indicators (percentages) except for polypharmacy where ANOVA was used to compare the mean number of drugs among the different age categories. A p-value ≤ 0.05 was considered significant.

Discussion

Given the scarcity of studies of drug prescribing behavior in Jordan, the present study was an attempt to shed light on the current situation in Jordan and to provide baseline data for future action. The study was conducted in primary health

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care centers in Amman governorate; the capital of Jordan, using the WHO recommended protocol. The present study showed the values of five prescribing indicators, namely: the average number of prescribed drugs per outpatient encounter (3.0), the percentage of medicines prescribed by generic name (50.3%), the percentage of prescriptions with an antibiotic prescribed (61%), the percentage of prescriptions with an injection prescribed (7%) and the Percentage of drugs prescribed from essential drug list (97.6%). Poly-pharmacy, overuse of antibiotics and under-prescribing by generic name are still common in Jordan. The overall average number of prescribed drugs per outpatient prescription (3.0) was substantially higher than the international average of 1.7 drugs per prescription, The range of number of drugs per encounter in different centers was from (2.7 to 3.4). Of particular concern was that 45% of prescriptions contained three or more drugs.

Poly-pharmacy has been defined as the use of more drugs than medically necessary. There are many negative consequences associated with poly-pharmacy; it is associated with increased risk of adverse drug events (ADEs), drug interactions, medication's non-adherence, reduced functional capacity and multiple geriatric syndromes It also increases cost.

Previous studies have shown increasing polypharmacy in Jordan. Indeed, the overall average number of drugs per prescription increased from 2.0 drugs per prescription in 1999 to 2.9 drugs per prescription in 2014, to reach 3.0 drugs per prescription in our study, 2017. Our study shows that polypharmacy in Jordan is higher than that in Pakistan United Arab Emirates and Saudi Arabia. where the numbers of drugs per prescription were 2.3, 2.2 and 2.4, respectively.

As expected, polypharmacy was most common among people aged >50 years (3.9 drugs per prescription), as people consume more medications with increasing age Prescribing for older people is challenging. They are often prescribed unnecessary drugs, drugs that are contraindicated in their age group or the wrong dose for their age. Increasing age is associated with changes in pharmacokinetics and pharmacodynamics, so prescribing in this age group can be problematic and increasing number of their drugs complicate their situation

One of the reasons behind the high rate of polypharmacy in people >50 was possibly the high prevalence of non- communicable diseases in Jordan, such as diabetes (17.4%) in 2008 and hypertension (32.3%) in 2009. Only half of the prescribed drugs were written using the generic name, which was far away from the optimal of 100%. Writing prescriptions using brand names has multiple dangerous adverse effects. Drugs with similar names, such as Losec and Lasix, Pradaxa and Plavix or Lamictal and Lamisil, have been cross-prescribed. In addition, selecting the brand-name drug can increase the cost and the doctors' profit margin by a double-digit multiple (the influence of drug companies)

The use of cheaper generic medicines is often promoted as a measure to reduce the healthcare expenditure on pharmaceutical products and provide savings to patients as well as governments

Authenticated recommendations by the WHO regarding generic prescribing provide a safety measure for patients. Wide variation in this indicator exists between countries with Jordan ranking in the middle. Prescribing by generic name ranged from as low as 10% in India to as high as 98% in Ethiopia.

Conclusion

Three of the 5 indicators, namely, the average number of drugs per prescription, the percentage

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of drugs written by generic name, and the percentage of prescriptions that contain antibiotics, fell short of WHO optimal values indicating that there is a room for improvement in prescribing behavior.

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