

THE ROLE OF PHARMACIST IN PROMOTING RATIONAL DRUG USE: THE CASE OF JORDAN
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ABSTRACT

The purpose of the study was to identify the current situations of some causes and problems concerning to the rational use of drugs in Jordan & to identify the community pharmacists' roles and perceptions towards the role in promoting rational drug use in Jordan. In addition, this study aims to investigate the rational medications use in Jordan since this investigation has not taken a place before.

To obtain information regarding the common problems and causes for irrational drug use in Jordan, a questionnaire was designed by the authors. The sample size (N) was 50, which was randomly selected to be representative of Jordan community pharmacists. The Field workers were briefed on the details of the project. The questionnaire consisted of 7 pre-formulated questions and was piloted in a small sample of the community pharmacists (i.e., 5% of the target sample size; n = 50); these data were not included in the analysis. The validity of questionnaire was assessed by pharmacy experts and there was no modification. Pharmacists' responses (data) were coded and entered into the Statistical Package for Social Sciences (SPSS) version 17 software, and then the results are shown as figures in Microsoft Excel 2007. The aim of this rating will be to test the frequency of these RDU problems and causes as perceived by the Jordanian pharmacists.

The major findings of the common problem in Jordan were that drug prescriptions used the trade name rather than the generic name of the drugs and there was wide spread misuse of antibiotics, antidiarrhoeal medicines and Nonsteroidal anti-inflammatory drugs.

From this study on the community pharmacists in Jordan it can be emphasized that appropriate training programs should be developed and implemented for the pharmacists to improve using of drugs. Appropriate programs should be also developed and implemented for teaching the general public about the rational use of drugs. The generic names of drugs rather than the trade names should be used in order to reduce drug costs & community pharmacist should review prescriptions for drugs such as antibiotics, NSAIDs, and antidiarrhoeals and should both ask relevant review questions as well as explaining to the patient reasons for rational drug taking to try to aid compliance.

INTRODUCTION

This study explores the role of professional community pharmacists in Jordan in promoting rational drug use (RDU). The basic consideration for this study was to analyse the present system, as to how community pharmacists play a role in promoting RDU in terms of accessibility and counselling to the general public. Based on this analysis the future directions for RDU could be explored and considered. It has recorded that there were 1818 registered pharmacies and 8000 registered pharmacists in Jordan with a majority of these being located in the community.⁽¹⁾ Promoting rational drug use in Jordan is integral for strengthening its health policy, quality and systematic organisation. Jordan has been chosen as the subject of this study amongst other Arab communities due to a marked prevalence of a "middle class" culture within its society unlike its fellow Arab communities the Saudi Arabia or the United Arab Emirates (UAE) as well as the presence of typical Middle Eastern cultural traits.⁽²⁾

The role of the pharmacist in promoting rational drug use in Arab communities like Jordan becomes imperative in the interests of promoting quality of health care in the face of limited economic sources.⁽¹⁾

The issue of the proper training and role of pharmacists involves a number of State and Non-State Actors like the USAID (United States Agency for International Development), the Jordanian Ministry of Health⁽³⁾ and the Jordan Food and Drug Administration, all of which play a pivotal role in

contributing to the development of a coherent Rational Drug Use (RDU) in Jordan. When it comes to reforming the health sector the agencies have mostly adopted a top down approach, for example the recent USAID attempt to bring about organisational reforms in the Jordanian National Drug Formulary (JNDF) Advisory Board, JNDF technical committees.

The aim is to promote amongst the general public a culture rational selection of essential medicines that is Rational Drug Use.⁽⁴⁾ However the top down approach is not sufficient on its own. What is required is an assessment of local perceptions of the communities at the grass roots level and their attitudes toward pharmacists. The aim of this study is to understand the context of the local Jordanian community and the role of the pharmacist in bringing about a culture of rational drug use amongst the community.⁽⁵⁾ This not only mandates the development of standard clinical guidelines, establishment of pharmacy and therapeutic committees, monitoring of drug utilisation, and pharmacovigilance but also societal training and education to the pharmacists to try and alter public perspectives about rational drug use.

The role of the pharmacist in promoting rational drug use is gaining more significance around the world, especially within developing countries like Jordan.⁽⁶⁾ The role of the pharmacist becomes important at the stage where the drugs are actually dispensed to the general public. This is a very important stage in the promotion and enhancement of

rational drug use in the local communities in terms of providing proper drug information to the patients pertaining to the dosage and use of dispensed drug.⁽⁷⁾ This helps to ensure effective pharmaceutical education in terms of drug safety and effective communication. The pharmacist in addition to maintaining an adequate drug supply and proper dispensing equipment needs to build effective relationships with the local community and as such this can be aided through a good perception of his or her status within the community.⁽⁸⁾ The efforts of promoting rational drug use can be at risk today due to a number of reasons. Most of these originate from a drug pharmacist's failure to recognize potential medication based errors arising from either wrong interpretation of the prescription or the diagnosis, improper dosages, inadequate dosages, inaccurate counting compounding or labeling.⁽⁹⁾

To avoid these problems which could compromise RDU, it becomes imperative to have trained, conscientious and responsible individuals in the Jordanian pharmaceutical profession.⁽¹⁰⁾ Whether it is drug procurement, distribution, prescribing OTC (over the counter drugs) or monitoring long term treatment for patients, pharmacists at all levels have an important role to play in rational drug use.⁽¹¹⁾ Whilst it is the pharmacists have a responsibility it is also true that patient education should be attempted which could ensure that the pharmacist could develop a role producing trust and respect in the society so that people pay attention to his or her advice. This would of course facilitate the introduction of RDU.

Rational Drug Use in Jordan

Rational drug use is a pivotal need for any health initiative, as inappropriate or incorrect dispensing practices in the pharmacy sector pose a threat to public health. The role of the pharmacist is to supplement state health facilities and physicians' diagnosis by ensuring that proper medication is dispensed to the patient and counselling the patient to comply with proper therapeutic procedures during drug intake.⁽¹²⁾ Despite the pivotal role of the pharmacist in health planning and health care delivery for the community, the role of the pharmacist has been until recently downplayed in Jordan. Furthermore, the dispensing of proper medicines in suitable and rational forms and in adequate quantities is also a significant factor in promoting good RDU practices.⁽¹³⁾

The next stage of trying to ensure RDU is that of diagnosis being effectively combined with adequate medicine dispensing as at this stage poor and uncontrolled dispensing practices have often been known to bring about detrimental effects for community health, potentially jeopardising the health care delivery system. In other words rational drug use

is necessary to prevent a waste of resources. Unless the correct medication is dispensed at the appropriate dosage and with clear instructions, the integrity of a health system can be compromised.⁽¹³⁾

In 1996, one of first initiatives was taken to rationalise drug use in Jordan through the development of the Essential Drug List (EDL) by Jordan's MOH (Ministry of Health) Drug Directorate. This was followed by the setting up of Jordan National Drug Formulary (JNDF) and the subsequent setting up of Rational Drug Use committees established by the Jordanian Drug Directorate. To date unfortunately, such initiatives have often resulted in an exercise in futility due to their failure of implementation and due to a lack of consensus and red tape.⁽¹⁴⁾ Nevertheless Jordan remains internationally within the group of countries that actually have a National Drug Policy. This is a step towards addressing the medical needs of the local population to serve as a better guidance for good practice in the pharmaceutical profession in terms of equity and access to health information.⁽¹⁾ The primary aim of the National Drug policy is still to promote rational drug use amongst the local communities. Despite the NDU's well-established legislative and regulatory framework in terms of drug strategy, selection, supply or drug supply, the primary concern for Jordan remains pharmaceutical reform at the grass roots level for the promotion of rational drug use.^(15,16)

Role of the Pharmacist

Contrary to the perception, that only the physician, doctor or nurse are the only people involved in pivotal decisions as to the use of drugs and health sources this is simply not true. The pharmacist, like the drug dispenser, often comes into more frequent contact with the general public in terms of dispensing the appropriate medication.⁽¹⁷⁾ To deal with the problem of promoting a culture of rational drug use in a bottom to top approach the community pharmacy becomes a very important location for practicing effective health care in societies like Jordan. In these terms the role of the pharmacist can also be viewed in the light of a health and remedy advisor.⁽¹⁸⁾ Although the role of the pharmacist differs from country to country in terms of qualifications, statutory and social roles. Traditionally the role of close contact with the people they dispense drugs for is an international professional responsibility, the pharmacy profession differs from those of a prescriber, which is usually a traditional role reserved for physicians and nurses. However times are changing although still pharmacists rather than others giving a recommendation for treatment can simply give out the treatment to the patient.⁽¹⁷⁾

This prompts the query as to whether any body who dispenses drugs can be any person with minimal skills and knowledge. (15) However, an untrained shopkeeper because of a lack of specialised knowledge claiming to be able to perform the role of a pharmacist cannot make any significant contribution to public health by promoting rational drug use. This means that the pharmacist should have a certain amount of training and qualification in order to be able to bring in the skills necessary to promote rational drug use.

EXPERIMENTAL

Methods

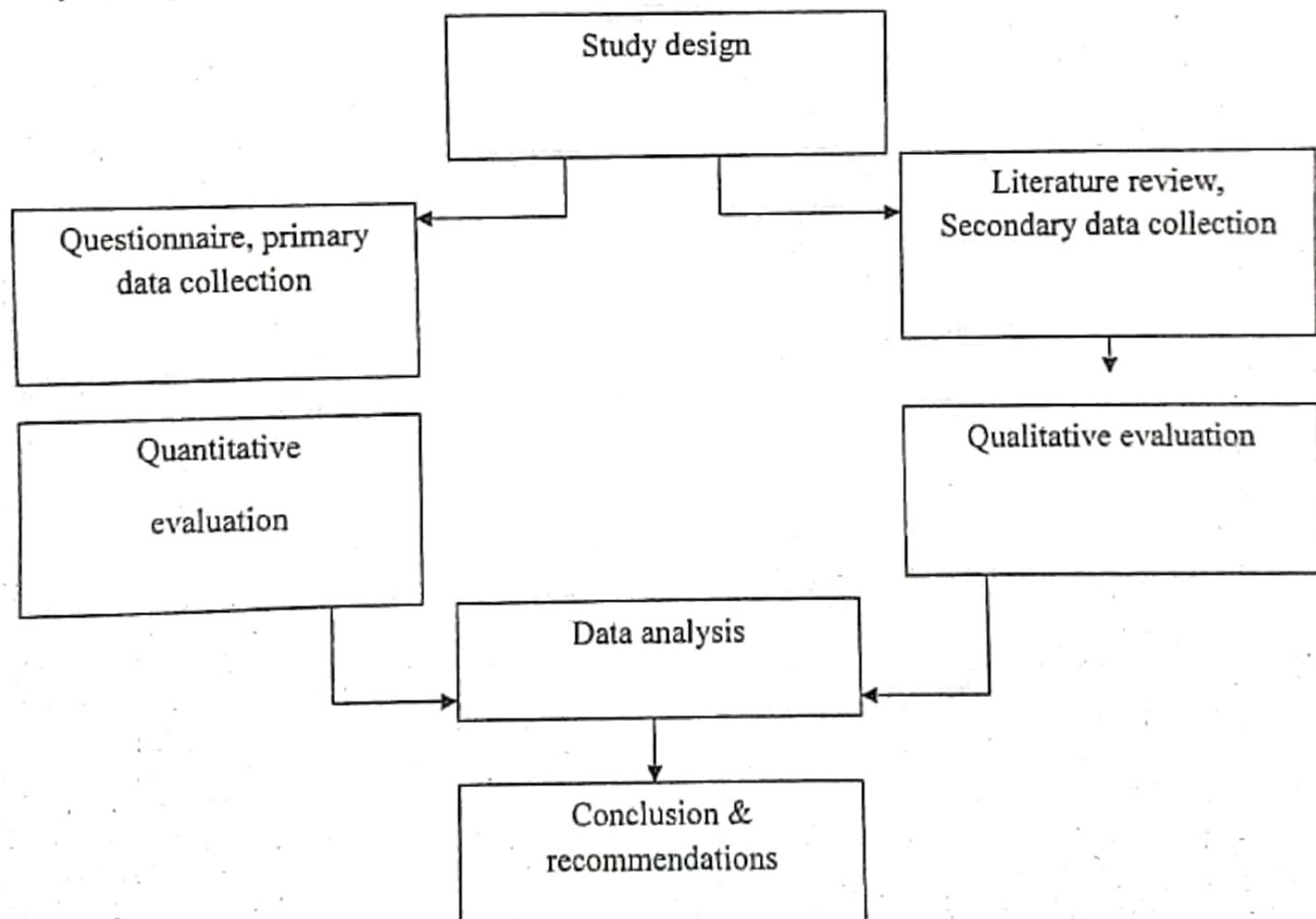
In Jordan, the rational use of medications in the community has not been previously investigated leaving a gap in knowledge. Because of that a questionnaire should be conducted. In addition to secondary data collection (Literature review), the methodology focuses upon analyses gathered from quantitative research (questionnaire). The questionnaire facilitates the study of the perceptions of a larger pool of subjects (pharmacists) here and is less time consuming. Both methods are however significant for maintaining coherence in the current study and analysis.

The questionnaire consisted of 7 pre-formulated questions and was piloted in a small sample of the community pharmacists (i.e., 5% of the target sample size; $n = 50$); these data were not included in the analysis.

The validity of the tool was assessed by pharmacy experts and there was no modification. Amman the capital of Jordan was the area in which the questionnaire was conducted.

The participants of this study were 100% randomly selected community pharmacists taken from different region of Amman the capital of Jordan in order to be representative to assess their current knowledge about certain situations concerning the causes and problems of irrational drug use in Jordan. 50.4% of respondents were males and 49.6% were females and the mean age was 32years old

The method of data collection was by a self reported questionnaire distributed to a random sample of fifty community pharmacists in Jordan. Pharmacists' responses (data) were coded and entered into the Statistical Package for Social Sciences (SPSS) software and then the results are shown as figures in Microsoft Excel 2007.



Ethical consideration

The study was submitted to Ethics Committee of the MOH in Jordan for their formal permission, although it is not actually required since there is no patient's data, confidential issues or health safety issues.

Limitations of study

Lack of structure and open-ended questions made the results difficult to analyse and interpret without the researcher interpreting the results in his/perception.

Questionnaire

The Role of the Pharmacist in Promoting Rational Drug Use in Arab Communities: the Case of Jordan

You are being invited to take part in a research study. Before you decide, it is important for you to

understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear, or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

This research paper explores the role of professional pharmacists in Jordanian community in promoting rational drug use (RDU). In this vein this research analyses and addresses the query as to what degree community pharmacists play a role in promoting RDU in terms of accessibility and counselling to the general public.

The questionnaire will be anonymous. The identity of contributors will not be revealed and the information will remain secure.

Please circle of the options 1-4 in the questions below after reading the questions carefully based on the following parameters. ضع دائره حول الخيار المناسب

Score 1 - Most Common (منتشر جدا)

Score 2 - Common (منتشر)

Score 3 - Occasional (احيانا)

Score 4 - Rare (نادرا)

Q1. To what extent do you consider the excessive use of antidiarrhoeals by the general public for nonspecific diarrhea a problem in your daily practices?

الى اي مدى يعتبر الاستخدام المفرط لمضادات الاسهال من قبل عامة الشعب

لعلاج الاسهال غير معروف السبب يشكل مشكلة من خلال ممارستك اليومية؟

1 Most common 2 Common 3 Occasional 4 Rare

Q2. Do you think there is a problem of overprescribing nonsteroidal anti-inflammatory drugs in Jordan?

هل تعتقد ان هناك مشكلة في الوصف الزائد لمضادات الالتهاب غير الستيرويدية

في الاردن؟

1 Most common 2 Common 3 Occasional 4 Rare

Q3. How often do you come across drug prescriptions titled with the trade name rather than the generic name of the drugs?

كم مرة تصادف فيها ادويه موصوفة بالاسم التجاري وليس الاسم العلمي للدواء؟

1 Most common 2 Common 3 Occasional 4 Rare

Q4. Do you come across the over-use of antibiotics to treat minor upper respiratory infections?

هل تصادف استخدام زائد للمضادات الحيوية في علاج الالتهابات التنويرية للجهاز التنفسي العلوي؟

1 Most common 2 Common 3 Occasional 4 Rare

Q5. To what extent do you find self-medication by your clients a problem in your daily practice?

الى اي مدى تجد المعالجة الذاتية من زبائنك تشكل مشكلة لك من خلال ممارستك اليومية؟

1 Most common 2 Common 3 Occasional 4 Rare

Q6. Rate each problem 1-4 below based on your perception as to the extent it contributes to the problem of irrational drug use in the Jordanian communities

صنف كل مشكلة تاليه على اساس ما لديكم من تصور بالنسبه لمدى مساهمة المشكله في الاستخدام غير الامثل للعلاج في المجتمع الاردني؟

Q6.1. Poor medical records. (سجلات طبيه غير كافيه □)

1 Most common 2 Common 3 Occasional 4 Rare

Q6.2. Lack of patient education about illnesses and drugs
والادويه

نقص في تعليم المريض عن الامراض

1 Most common 2 Common 3 Occasional 4 Rare

Q6.3. □ No family doctor system. □ عدم وجود طبيب اسره □

1 Most common 2 Common 3 Occasional 4 Rare

Q6.4. Lack of standard treatment guidelines
عدم وجود دليل علاجي معياري

1 Most common 2 Common 3 Occasional 4 Rare

Q6.5. Lack of continuing medical education (CME) for doctors and pharmacists.

نقص التعليم الطبي المستمر للاطباء والصيادلة

1 Most common 2 Common 3 Occasional 4 Rare

Q7. Based your own perception of pharmacology which of the following actions or omissions by the pharmacists could be a greater cause of irrational drug use (Please rate each issue between 1-4

بالاعتماد على تصورك الخاص بعلم الادويه اي من الافعال التاليه او التجاوزات التي يقوم بها الصيادلة يمكن ان تكون السبب الرئيسي في الاستخدام غير الامثل للعلاج ؟

Q7.1. Overuse of injections استخدام زائد للحقن

1 Most common 2 Common 3 Occasional 4 Rare

Q7.2. Overuse of vitamins استخدام زائد للفيتامينات

1 Most common 2 Common 3 Occasional 4 Rare

Q7.3. Drug identification or dosage-related problems

مشاكل عائده الى معرفة الدواء او الجرعه

1 Most common 2 Common 3 Occasional 4 Rare

Q5. To what extent do you find self-medication by your clients a problem in your daily practice?

الى اي مدى تجد المعالجه الذاتيه من زبائنك تشكل مشكلة لك من خلال ممارستك اليومية؟

1 Most common 2 Common 3 Occasional 4 Rare

Q6. Rate each problem 1-4 below based on your perception as to the extent it contributes to the problem of irrational drug use in the Jordanian communities

صنف كل مشكلة تاليه على اساس ما لديكم من تصور بالنسبه لمدى مساهمة المشكله في الاستخدام غير الامثل للعلاج في المجتمع الاردني؟

Q6.1. Poor medical records. (سجلات طبيه غير كافيه)

1 Most common 2 Common 3 Occasional 4 Rare

Q6.2. Lack of patient education about illnesses and drugs
والادويه

نقص في تعليم المريض عن الامراض

1 Most common 2 Common 3 Occasional 4 Rare

Q6.3. No family doctor system. عدم وجود طبيب اسره

1 Most common 2 Common 3 Occasional 4 Rare

Q6.4. Lack of standard treatment guidelines عدم وجود دليل علاجي معياري

1 Most common 2 Common 3 Occasional 4 Rare

Q6.5. Lack of continuing medical education (CME) for doctors and pharmacists.

نقص التعليم الطبي المستمر للاطباء والصيداله

1 Most common 2 Common 3 Occasional 4 Rare

Q7. Based your own perception of pharmacology which of the following actions or omissions by the pharmacists could be a greater cause of irrational drug use (Please rate each issue between 1-4
بالاعتماد على تصورك الخاص بعلم الادويه اي من الافعال التاليه او التجاوزات التي يقوم
بها الصيادل يمكن ان تكون السبب الرئيسي في الاستخدام غير الامثل للعلاج ؟

Q7.1. Overuse of injections استخدام زائد للحقن

1 Most common 2 Common 3 Occasional 4 Rare

Q7.2. Overuse of vitamins استخدام زائد للفيتامينات

1 Most common 2 Common 3 Occasional 4 Rare

Q7.3. Drug identification or dosage-related problems

مشاكل عائده الى معرفة الدواء او الجرعه

1 Most common 2 Common 3 Occasional 4 Rare

Q7.4. Improper drug labelling وضع علامات او بطاقات غير مناسبة على الدواء

1 Most common 2 Common 3 Occasional 4 Rare

Q7.5 Omission or failure to tell the patient how to use the medications

اهمال او اخفاق في اخبار المريض حول كيفية استخدام العلاجات

1 Most common 2 Common 3 Occasional 4 Rare

Q7.6. Unlicensed prescriptions uncaught by a lack of proper drug regulations.

وصفات غير مرخصة لا يمكن منعها بسبب عدم وجود ضوابط مناسبة للأدوية

1 Most common 2 Common 3 Occasional 4 Rare

Q7.7. Lack of proper consulting and dispensing time allocated to each patient.

نقص في وقت الاستشارة و الصرف المخصص لكل مريض

1 Most common 2 Common 3 Occasional 4 Rare

Q7.8. Failure to procure and stock important and up to date drugs

الاخفاق في شراء و تخزين الادوية المعيمه والحديثه

1 Most common 2 Common 3 Occasional 4 Rare

Q7.9 Defective prescription analysis خلال في تحليل الوصفه

1 Most common 2 Common 3 Occasional 4 Rare

RESULTS

The results were presented in Appendix 2 and summarized as mentioned below:

The prescription of the drug with the trade name rather than the generic name of the drugs is a most common problem in Jordan since the pharmacists' replies were "Most Common".

No pharmacist has answered the problem of defective prescription analysis as "Most Common".

The median results of the questions Q1 (To what extent do you consider excessive use antidiarrhoeals by the general public for nonspecific diarrhea a problem in your daily practices), Q2 (Do you think there is a problem of overprescription of nonsteroidal anti-inflammatory drugs in Jordan), Q4 (Do you come across the over-use of antibiotics to treat minor upper respiratory infections), (Q6.1-Q6.5) (Poor medical records, Lack of patient education about illnesses and drugs, No family doctor system, Lack of standard treatment guidelines, Lack of continuing

medical education (CME) for doctors and pharmacists), Q7.2 (Overuse of vitamins) and Q7.3 (Drug identification or dosage-related problems) are "Common" since their medians equal to 2. Therefore, the problems and causes (the above questions) are "Common" in Jordan.

The median of Q3 (How often do you come across drug prescriptions titled with the trade name rather than the generic name of the drugs) is equal to 1. This implies that the problem represented in Q3 is "Most Common" in Jordan. The medians of Q5 (To what extent do you find self-medication by your clients a problem in your daily practice), Q7.1 (Overuse of injections) and (Q7.4-7.9) (Improper drug labelling, Omission or failure to tell the patient how to use the medications, Unlicensed prescriptions uncaught by a lack of proper drug regulations, Lack of proper consulting and dispensing time allocated to each patient, Failure to procure and stock important and up to date drugs, Defective prescription analysis)

are equal to 3. This leads to the fact that the causes and problems are "Occasional" in Jordan.

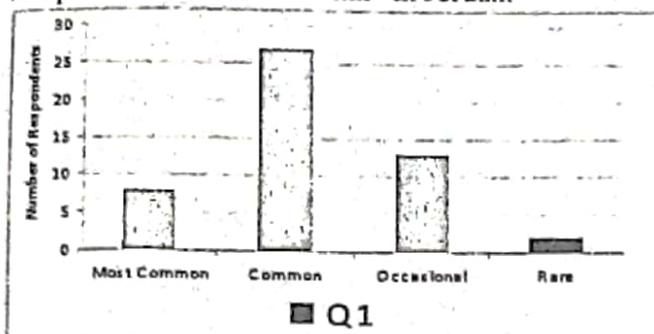


Fig. 1: Analysis of the pharmacists' answers to the question about excessive use of antidiarrhoeals by the general public for nonspecific diarrhea.

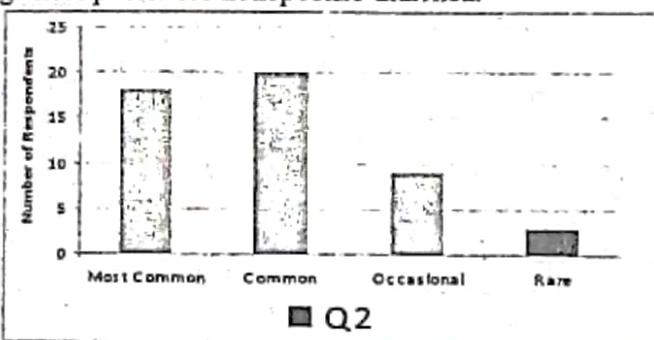


Fig. 2: Analysis of the pharmacists' answers to the question about the overprescribing of nonsteroidal anti-inflammatory drugs in Jordan.

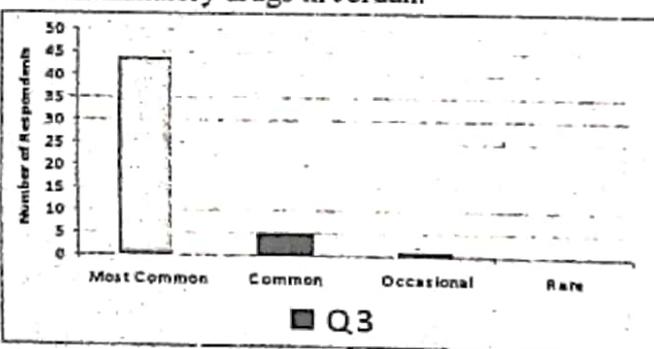


Fig. 3: Analysis of the pharmacists' answers to the question about prescriptions titled with the trade name rather than the generic name of the drugs.

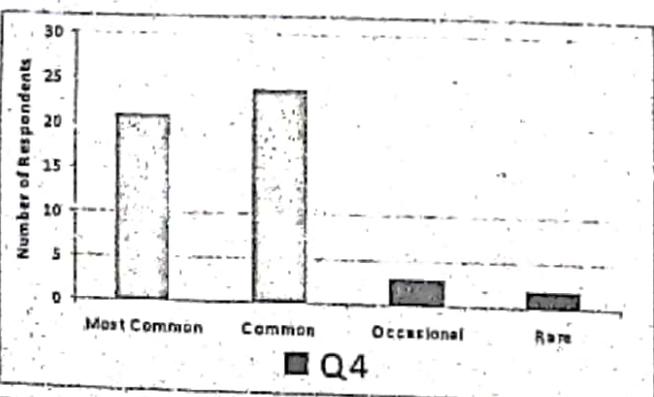


Fig. 4: Analysis of the pharmacists' answers to the question about the over-use of antibiotics to treat minor upper respiratory infections.

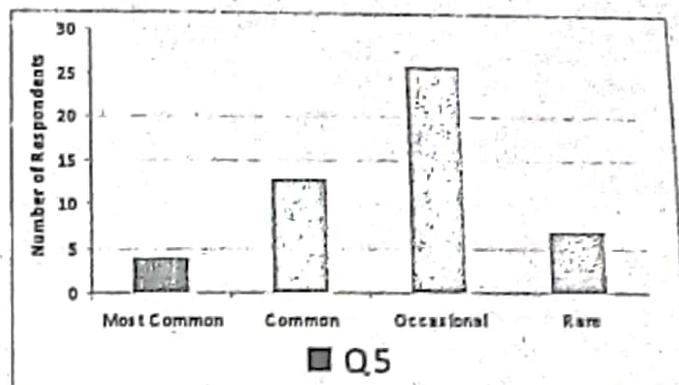


Fig. 5: Analysis of the pharmacists' answers to the question about the problem of self-medication by patients.

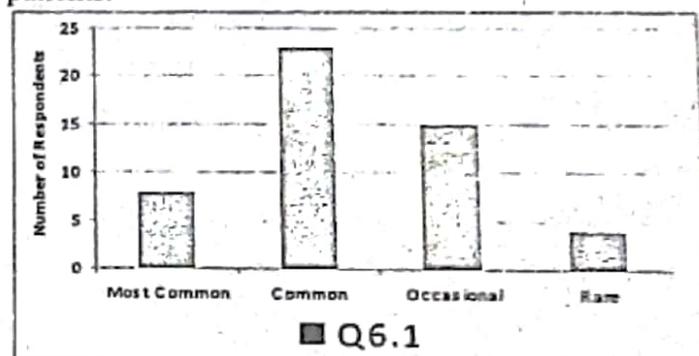


Fig.6: Analysis of the pharmacists' answers to the question about the cause of poor medical records.

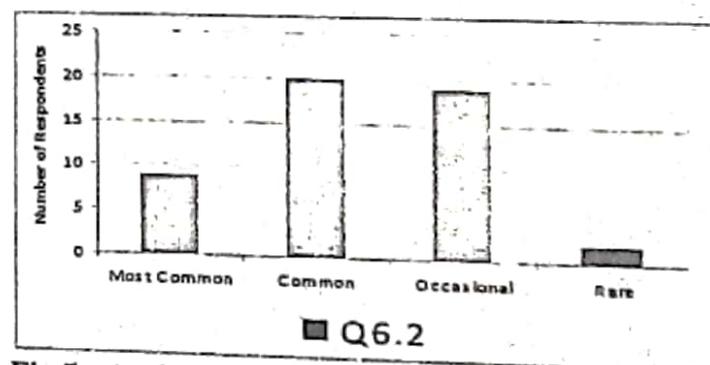


Fig.7: Analysis of the pharmacists' answers to the question about the cause of lack of patient education about illnesses and drugs in Jordan.

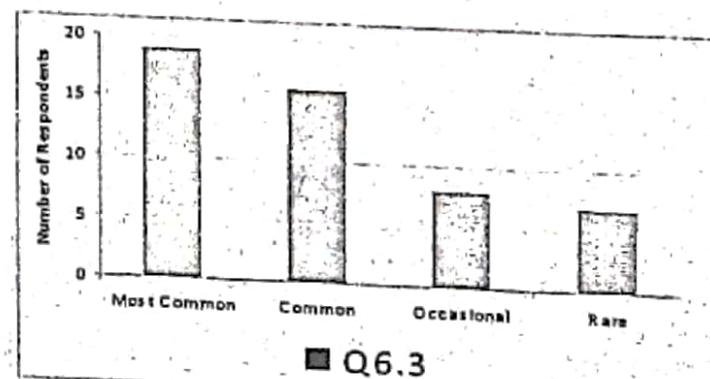


Fig.8: Analysis of the pharmacists' answers to the question about the cause of no family doctor system in Jordan.

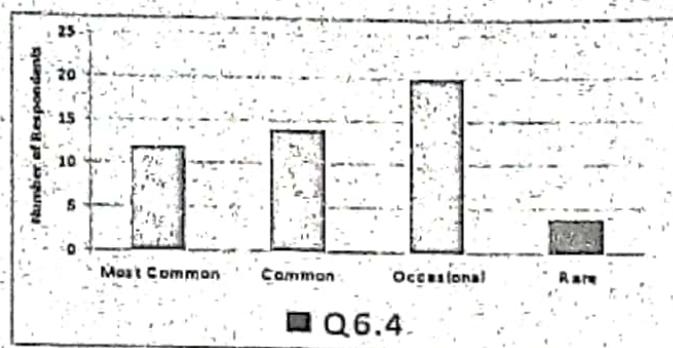


Fig. 9: Analysis of the pharmacists' answers to the question about the cause of a lack of standard treatment guidelines in Jordan.

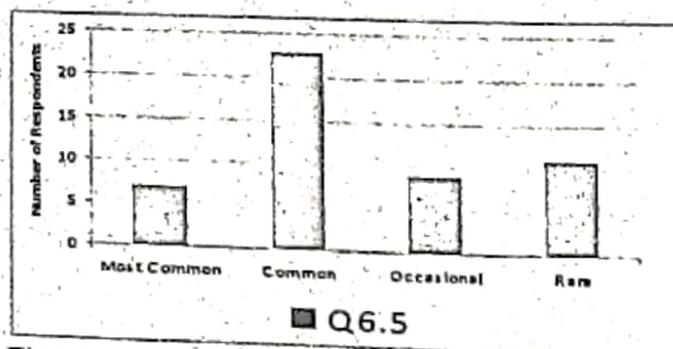


Fig.10: Analysis of the pharmacists' answers to the question about the cause of lack of continuing medical education (CME) for doctors and pharmacists in Jordan.

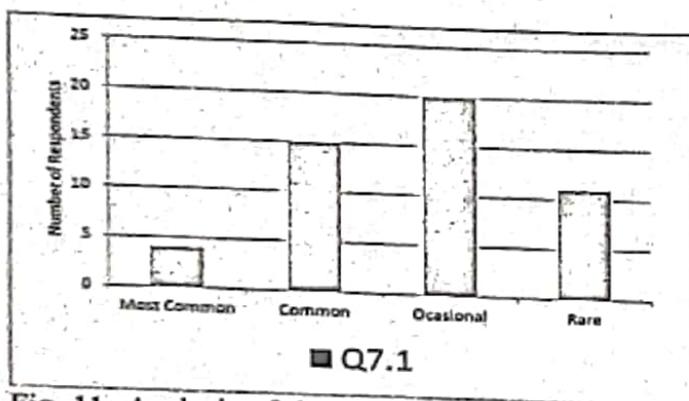


Fig. 11: Analysis of the pharmacists' answers to the question about the problem of overuse of injections.

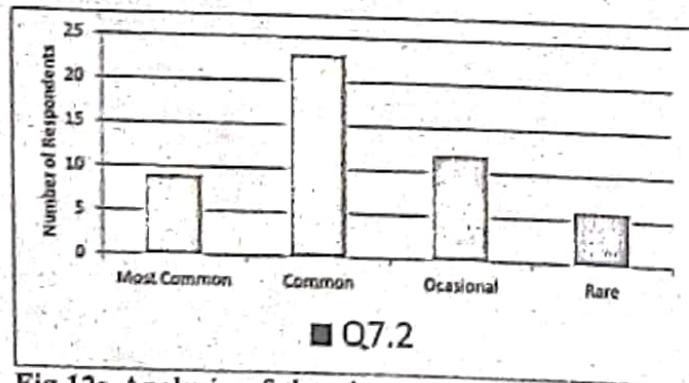


Fig.12: Analysis of the pharmacists' answers to the question about the problem of overuse of vitamins.

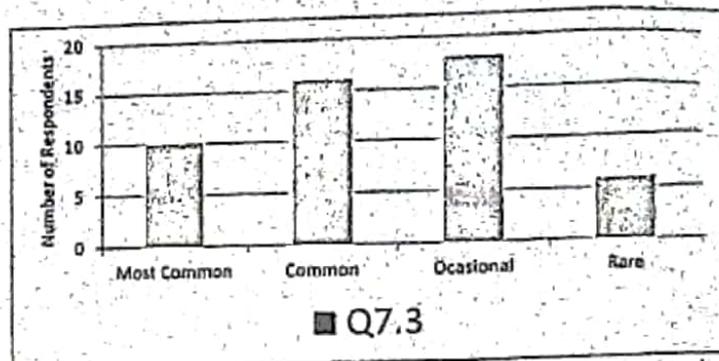


Fig.13: Analysis of the pharmacists' answers to the question about the problem of drug identification or dosage-related.

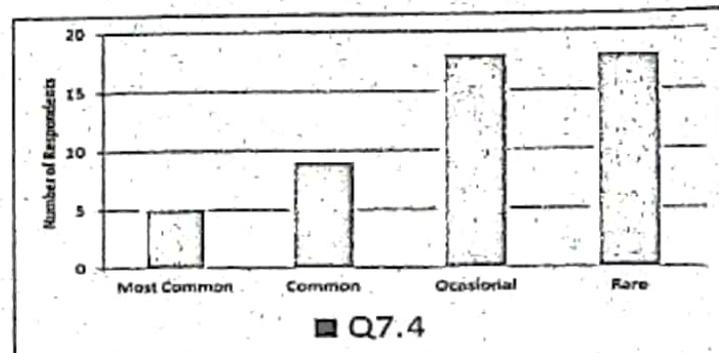


Fig.14: Analysis of the pharmacists' answers to the question about the problem of improper drug labelling in Jordan.

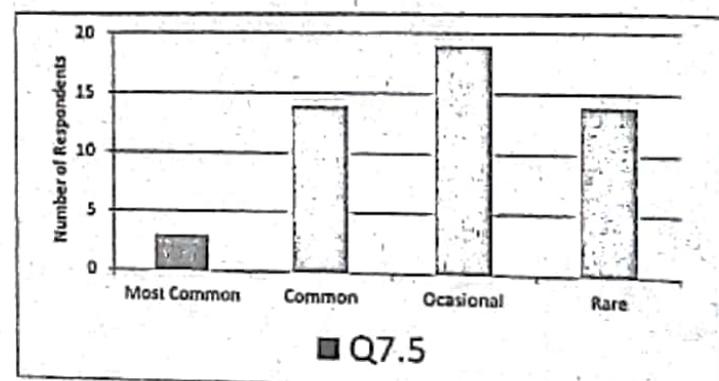


Fig.15: Analysis of the pharmacists' answers to the question about the problem of omission or failure to tell the patient how to use the medications in Jordan.

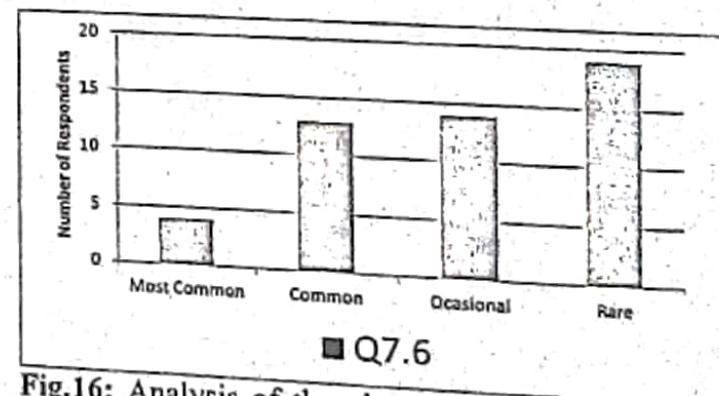


Fig.16: Analysis of the pharmacists' answers to the question about the problem of unlicensed prescriptions uncaught by a lack of proper drug regulations in Jordan.

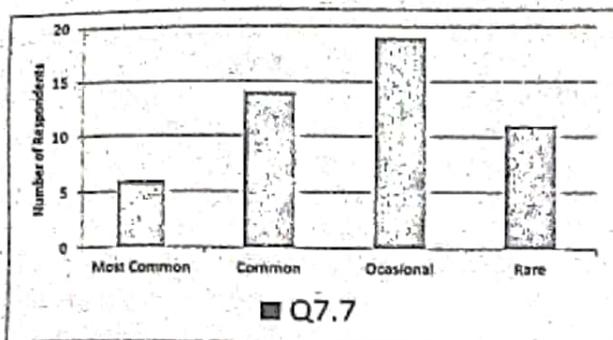


Fig.17: Analysis of the pharmacists' answers to the question about the problem of lack of proper consulting and dispensing time allocated to each patient in Jordan.

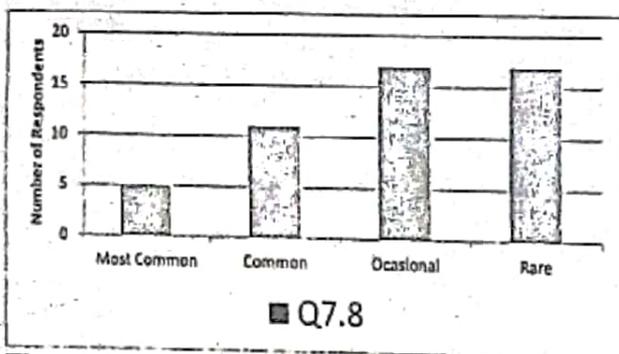


Fig.18: Analysis of the pharmacists' answers to the question about the problem of failure to procure and stock important and up to date drugs in Jordan.

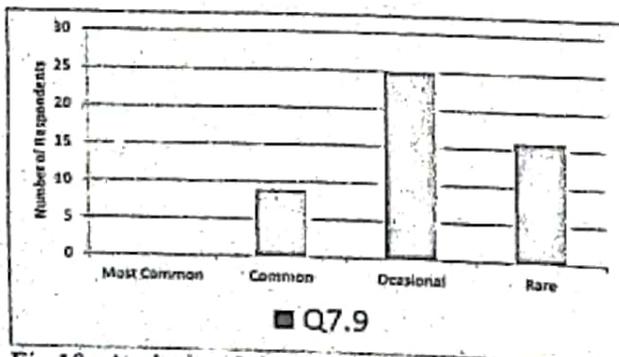


Fig.19: Analysis of the pharmacists' answers to the question about the problem of defective prescription analysis in Jordan.

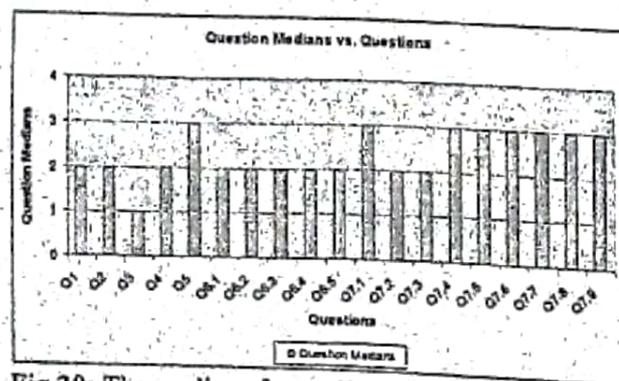


Fig.20: The medians for each question.

DISCUSSION

It is clear from Figure 1.20 that the medians obtained from questions Q1, Q2, Q4, (Q6.1-Q6.5), Q7.2 and Q7.3 are 2 (Common) since a lot of pharmacists have answered these questions as Common. As a result, the problems and causes which represent the above questions are common in Jordan. Moreover, a discussion as to why these problems and causes are common in Jordan is presented later in this section. Figure 2.20 reveals that only in Q3 the median is 1 (Most Common) because most of the pharmacists' responses were Most Common. Q3 represents the problem of drug prescriptions labelled with a trade name rather than the generic name in Jordan. The reason that the pharmacists' replies were Most Common is due to the effect of drug promotions carried out by medical companies through their medical representatives. For example, it has been demonstrated that commercial sources of medical information have a greater impact on the decision making process of family doctors and other medical personnel when compared to scientific sources of data.⁽¹⁹⁾

Prescriptions of drugs by trade name rather than generic name can be considered as a type of irrational drug use because there is a probability that it will lead to an increase in the price of a drug as many drugs that have the same active ingredient but with different trade names and their costs are not the same. So, when a drug is prescribed with a trade name rather than a generic name this means that the patient must take this type of drug which has high cost rather than other generic alternatives.

In most cases in the developing world, physicians believed that certain targeted drug advertisement and the interaction with pharmaceutical representatives was the primary deciding factor for them deciding on a particular drug or compound for patients. Furthermore, meetings and the influence of medical representatives was associated with requests by physicians to promote certain drugs to their inventory, which in turn resulted in changes to local prescribing practices resulting in higher prescribing costs and irrational prescribing practices. Therefore, the interaction with major international drug companies and physicians or other medical staff, raises significant ethical and scientific questions, particularly in terms of prescribing drugs, vitamins and other compounds in developing countries and markets.⁽²⁰⁾

It is obvious in Figure 1.20 that the median results of Q5, Q7.1 and (Q7.4-7.9) are 3 (Occasional). This is because many of the pharmacists' replies were Occasional. For example the problem of the overuse of injections in Jordan (Q7.1) was occasional in

Jordan with reference to the pharmacist responses; this occasional result has been obtained due to the following: 1) Using injections is not appropriate in all situations, and 2). It could be painful if they are compared with other dosage forms.

From the individual responses of the pharmacists, it is found that most of the pharmacists who answered Q1 as "Common" have answered Q6.3 as either "Common" or "Most Common". As a result, a similarity between Q1 and Q6.3 exists. To be clear, Q1 represents the problem of excessive use of antidiarrhoeals by the general public for non specific diarrhoea and Q6.3 denotes no family doctor system. When a member of the public becomes sick with diarrhoea as one of the symptoms, with no family doctor for this person, he/she may take an antidiarrhoeal drug without diagnosis. Then this person may treat the symptoms but not the causes. The causes of diarrhoea require a doctor to treat. Thus, it is inferred that the absence of a family doctor system leads largely to the irrational use of antidiarrhoeal drugs in Jordan.

This point is amplified further by Li *et al.*⁽²¹⁾ who pointed out that one of the problems associated with over-prescription of some antidiarrhoeal medication is that the underlying cause may not be fully evaluated and the diarrhoea may be considered as a social nuisance rather than a potential symptom of more sinister pathology. Many of the antidiarrhoeal medications are capable of producing long term tolerance, which is well documented, and they are also noted to be difficult to wean patients from.⁽²¹⁾ Antidiarrhoeal drugs cover a huge spectrum of drug categories and range from the opioid derivatives, through bulking agents to absorbent agents which can all be used in conditions of rapid intestinal transit. From my experience I have noted that loperamide is one of the most commonly prescribed medications for acute forms of diarrhea in Jordan. One can note that loperamide is an opioid derivative and although it does not cross the blood/brain barrier in appreciable quantities it is still capable of producing dependence or habituation problems.⁽²²⁾

The main solution for the problem of diarrhoea especially in children is to use Oral Rehydration Solution (ORS) at the beginning rather than giving drugs without knowing the exact cause of the condition. After taking ORS the first step is a laboratory test for the stool which should be conducted in order to identify any causative Pathogenic organism. Consequently, the diarrhoea problem requires correct diagnosis before taking any type of drugs because the drug will remove the symptoms but not the cause.

The individual responses of the pharmacists who answered Q2 as "Common", many of whom have answered "Common" or "Most Common" in Q6.1. Q2 and Q6.1, represent the problem of over prescription of non steroidal anti-inflammatory drugs and poor medical records respectively. It is observed that Q2 has a correlation with Q6.1, and the explanation for this is as follows: With poor medical histories of patients in the pharmacist and doctor systems, the doctors can prescribe drugs such as anti-inflammatory drugs for their patients several times without knowledge if these patients have previously taken these drugs. Excessive use of these non steroidal anti-inflammatory drugs, i.e. diclofenac and ibuprofen, by the patients will lead to increased side effects. The pharmacists are like doctors, with reference to having poor medical records of their patients. So, the pharmacists may dispense the non steroidal anti-inflammatory drugs without knowing if their patients have been taking these drugs before. Therefore, dispensing different kinds of non steroidal anti-inflammatory drugs by the pharmacists may increase the side effects on the patients. It is concluded that the absence of the patient medical records in the pharmacist and doctor systems can greatly increase the over prescription of non steroidal anti-inflammatory drugs in Jordan.

Most of the pharmacists who have answered Q2 as "Common" have answered Q6.2 as "Common" or "Most Common". From the same individual replies of the pharmacists in Q2 and Q6.2, a link can be drawn between them. Q6.2 represents the lack of patients' education about illness and drugs. The lack of patients' education may lead the patients to take drugs with high side effects although there are drugs with lower side effects. For example, a patient takes diclofenac as an analgesic which has several side effects (hypertension, renal toxicity, asthma exacerbation, allergic reactions and ulcer) whereas this patient can avoid many of the side effects by taking drugs with a lower risk of side effects such as paracetamol as an analgesic. Unfortunately, in Jordan most of the patients use diclofenac to manage their different pain conditions.⁽²³⁾ It is inferred in Jordan that the lack of patient education about illnesses and drugs has led to an increase in the over prescription of non steroidal anti-inflammatory drugs which are taken as an analgesic.

In order to minimise the side effects, and respectably increase awareness in people regarding their drug use, the main category of health care professionals who are pharmacists should ensure that NSAIDs are used correctly, and also avoid any unnecessary prescriptions, including over usage of drugs which is achieved by counselling each patient individually.

Q2 can be linked with Q6.3 by observing the pharmacists' individual responses for these questions. After analysing these responses for Q2 and Q6.3, it is observed that many of the pharmacists who answered Q2 as "Common" answered Q6.3 as either "Common" or "Most Common". As a result, Q2 can be linked to Q6.3. To be more specific, Q6.3 denotes the question of no family doctor system. Since there is no family doctor system, the patients may take non steroidal anti-inflammatory drugs several times without being aware of the side effects of these drugs on them. Furthermore, in the absence of a family doctor system as well as in the absence medical records in the pharmacist systems can lead to the pharmacists dispensing several non steroidal anti-inflammatory drugs without prescriptions. Thus, the side effects on the patients will increase. It is concluded that no family doctor system leads to the over use and over prescription of the non steroidal anti-inflammatory drugs in Jordan. The causes of inappropriate numbers of family doctors in developing countries include a number of important factors.⁽²⁴⁾ Primarily, these include the lack of significant teaching institutions and adequate student numbers to provide an appropriate level of family doctors in the local communities

A lot of pharmacists' individual responses for Q4 and Q6.1 are similar, which means that many of the pharmacists who answered Q4 as "Common", have answered Q6.1 as "Common" or "Most Common". From this, a link can be drawn between Q4 and Q6.1. Q4 represents the overuse of antibiotics to treat minor upper respiratory infections. Because of the existence of poor medical records for the patients in the doctor and pharmacist systems, the doctor or pharmacist can prescribe antibiotic drugs for a patient without knowing what antibiotic drug generations have been used by the patient before. Therefore, bacterial resistance may occur. Consequently, the antibiotic drugs may not be active on the bacteria. In addition, the side effects of the antibiotic drugs may be increased with no benefits. It is concluded that the poor medical records in the doctor and pharmacist systems greatly lead to the overuse of antibiotics to treat minor upper respiratory infections in Jordan.

A lot of the pharmacists who answered Q4 as "Common" answered Q6.3 as "Common" or "Most Common". This leads to the existence of a link between the two questions. This link is explained as follows: Since there is no family doctor system, the patients may take antibiotic drugs to treat themselves without visiting the doctor. Largely, this can increase the side effects and the bacterial resistance. Furthermore, the pharmacists may dispense several kinds of antibiotic drugs for their patients without prescriptions and without knowing what generations

of antibiotic drugs have been taken by the patients. This can also increase the side effects and bacterial resistance. Finally, no family doctor system is an effective cause leading to the overuse of antibiotics to treat minor upper respiratory infections in Jordan.

There is a correlation between Q6.2 and 7.2; this can be noted by the individual responses for the pharmacists. Many of the pharmacists who have answered Q6.2 as "Common" have answered Q7.2 as "Common" or "Most Common". Q7.2 represents the overuse of vitamins by the general public. Many of the general public think that taking a lot of vitamins cannot affect their health. However, the overuse of vitamins may cause toxicity. For example, It has been noted that vitamin A doses of 25,000 IU or greater have severe side effects on individuals who do not demonstrate abnormally low levels of vitamin A in blood levels. If such doses are taken on a daily basis for a prolonged period of time, they could pose a significant health risk to certain groups, such as pregnant women and their unborn fetuses. Some animal studies have demonstrated that very large doses of vitamin A in pregnant specimens result in central nervous system abnormalities with hydrocephalus, encephalocoele and other multiple teratological effects on the offspring.⁽²⁵⁾ Thus, in Jordan the lack of general public education, i.e. patient's education about illnesses and drugs may lead to toxicity through the overuse of vitamins.

A rational drug use study has been applied on the pharmacists' community in Jordan. The recommendations are made and given in the following points:

1. Appropriate training programs should be developed and implemented for the pharmacists to improve using of drugs.
2. Appropriate programs should be developed and implemented for teaching the general public about the rational use of drugs.
3. The generic names of drugs rather than the trade names should be used in order to reduce drug costs.
4. Control and monitor the promotions of drugs.
5. Pharmacist involvement in educating the patients is needed to decrease the frequency of side effects.
6. A community pharmacist should review prescriptions for drugs such as antibiotics, NSAIDs, and antidiarrhoeals and should both ask relevant review questions as well as explaining to the patient reasons for rational drug taking to try to aid compliance.

Since pharmacists are in close contact with the patients on a regular basis, they are able to assist patient compliance with appropriate drug

administration, even if the patient provides false information regarding drug administration, the pharmacist is able to measure the accuracy of the information provided by the patient.

CONCLUSION

From this study on the community pharmacists in Jordan it can be emphasized that appropriate training programs should be developed and implemented for the pharmacists to improve using of drugs. Appropriate programs should be also developed and implemented for teaching the general public about the rational use of drugs. The generic names of drugs

rather than the trade names should be used in order to reduce drug costs & community pharmacist should review prescriptions for drugs such as antibiotics, NSAIDs, and antidiarrhoeals and should both ask relevant review questions as well as explaining to the patient reasons for rational drug taking to try to aid compliance

Disclosure of benefit

We declare that the authors have no conflicting interests, and are or not supported/funded by any drug company

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دور الصيدلي في تحفيز الاستخدام الامثل للعلاج في المجتمعات العربية : حالة الاردن يارا ابوطالب، طلعت البقور، ندى العزب، راندة السعيدة، حكيم العبيد الله الخدمات الطبية الملكية، عمان، الأردن

ان الهدف من هذه الدراسة هو معرفة الوضع الحالي لبعض المشاكل والاسباب فيما يتعلق بالاستخدام الامثل للعلاج في الاردن وتعيين دور صيدلي الصيدليات العامه وادراكه لهذا الدور في تحفيز الاستخدام الامثل للعلاج. هذه الدراسة تهدف الى البحث في الاستخدام الامثل لبعض العلاجات طالما ان مثل هذا البحث لم يتم التطرق اليه سابقا. من اجل الحصول على معلومات فيما يتعلق بالاسباب والمشاكل الشائعة للاستخدام غير الامثل للعلاج في الاردن تم عمل استبيان من قبل المؤلفين. كان حجم العينة خمسين صيدليه عامه تم اختيارها عشوائيا لتمثل صيادلة الصيدليات العامه في الاردن. تم ابلاغ المشتركين في العينة بتفاصيل الدراسة. كان الاستبيان يتكون من سبعة اسئلة صيغت مسبقا وتم تجربتها على عينه صغيره من الصيادلة العاملين في الصيدليات العامه (5% من حجم العينة الكليه) وهذه المعلومات لم يتم شمولها في التحليل النهائي تم تقييم صحة الاستبيان من خلال عرضه على خبراء في مجال الصيدله ولم تكن هناك تعديلات تذكر. تم تحصيل استجابات صيادلة الصيدليات العامه (المعلومات) وبعد ذلك تم ترميزها وادخالها الى برنامج التحليل الاحصائي spss نسخه رقم 17. وتم اظهار النتائج على شكل رسومات بيانيه باستخدام برنامج Microsoft Excel 2007. الغايه من هذا التصنيف هو معرفة مدى تكرار المشاكل والاسباب العائده للاستخدام غير الامثل للعلاج كما تم تصورها من قبل صيادلة الصيدليات العامه. ان ابرز ما وجدته هذه الدراسة هو ان اكثر المشاكل شيوعا في الاردن هو كتابة وصفات الادويه بالاسم التجاري اكثر من الاسم العلمي، بالاضافه الى وجود سوء استخدام واسع للمضادات الحيويه، مضادات الاسهال، ومضادات الالتهابات غير الستيروديه. من خلال هذه الدراسة يمكن ان نؤكد على وضع وتطوير برامج التدريب المناسبه للصيادلة من اجل تطوير استخدام العلاج. انشاء وتطوير البرامج المناسبه لتعليم عامة الشعب حول الاستخدام الامثل للعلاج. استخدام الاسم العلمي للعلاج من اجل تخفيض كلفة العلاج. على الصيدلي العامل في الصيدليات العامه ان يتحقق من الوصفات التي تحتوي على مضادات حيويه او مضادات التهابات غير ستيروديه او مضادات اسهال وسؤاله اسئله تعود لحالة المريض وشرحه للمريض ان تناول العلاج بطريقه مثلى يساعد في تقبل العلاج.