

Pharmacists' Awareness of Drug Counterfeiting in Jordan

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ABSTRACT

Objective: The purpose of the study is to identify the pharmacist's awareness and the contributing factors of drug counterfeiting in Jordan.

Method: The study used a descriptive cross-sectional design. Study participants included a convenience sample of 100 Jordanian pharmacists who worked in three different fields of pharmacy including community, industrial and quality control in Amman. The data were collected by a self report questionnaire which was developed by the authors and was composed of open and closed ended questions. The validity of questionnaire was assessed by experts in the field of the pharmacy working in the Jordan Food and Drug Administration with no modification and it was piloted and tested on four pharmacists. The response rate was 62%. The data were analyzed by using the Statistical Package for Social Sciences.

Results: The results showed that around 76% reported high awareness of drug counterfeiting problem and the current laws and regulations in Jordan and 54.8% perceived the regulations are extensive enough. The majority (63%) of the respondents did not come across any case of counterfeiting themselves, while 37% had come across counterfeit cases and 50% of them had come across several cases. About half (51%) of the respondents thought that drug counterfeiting is not a serious problem while 48.4% thought it is a very serious problem. In addition to that, 54.8% thought that it is difficult to invade the Jordanian market with counterfeit drugs while 35.5% think that Jordan could be invaded easily.

Conclusions: This study supports that drug counterfeiting is a major health problem and has a major impact worldwide on public, pharmaceutical companies as well as governments. It also emphasizes that more statistical databases and national research on the percentage of drug counterfeiting in Jordan are needed to analyze and facilitate monitoring the size of problem.

Key words: Awareness, Drug counterfeiting, Pharmacist

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Introduction

Improving the quality of health services depends on many factors one of which is providing drugs; therefore they have to be available at all times and reachable to all population. Access to medicines especially for developing countries is still a big challenge

because of their high prices, causing patients in these countries to seek alternative cheap sources thus making patients more vulnerable to counterfeit medicines. On the other hand, the new technologies in developed countries expose their patients to criminals dealing with counterfeit medicines mainly through the internet

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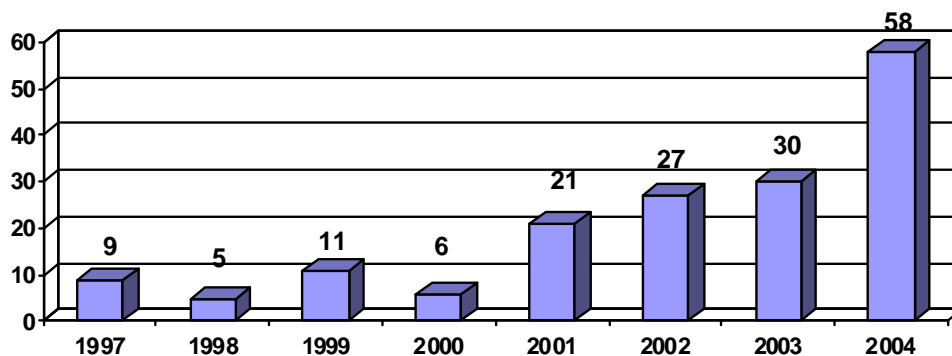


Fig . 1: The increasing number of counterfeit cases opened by Food and Drug Administration per year

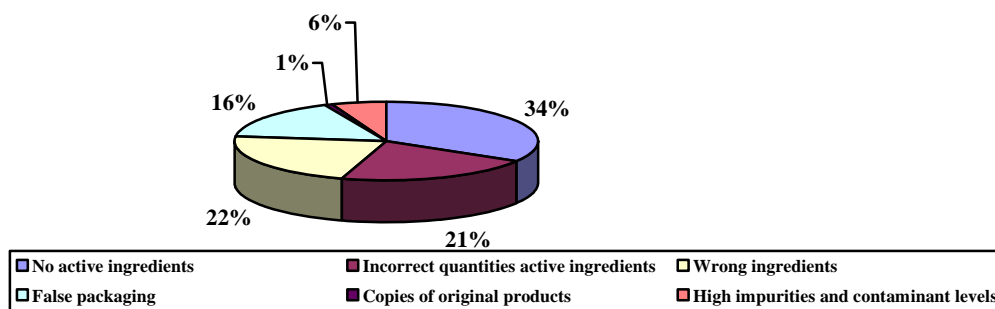


Fig. 2: Types of counterfeit drugs

by fake advertisement about medicines. The World Health Organization (WHO) estimates that medicines purchased over the internet from sites that conceal their physical address are counterfeit in over 50% of cases.⁽¹⁾ Counterfeit drugs are a global public health problem, causing death, disability and injury affecting both adults and children. However, defining the true extent of the problem is difficult and not really known since no global study has been carried out. It is clear from individual country studies that counterfeiting is a major world problem, but the variety of information sources makes compiling and comparing statistics a difficult task, also some countries and drug companies keep information they have strictly confidential so as not to lose their reputation.⁽²⁾ In this respect, the capacity now to collect and analyze data has improved since the WHO launched a campaign to fight drug counterfeiting and a task force called International Medical Products Anti-Counterfeiting Task force (IMPACT) which was set up in 2006. For almost 20 years, the WHO has been fighting drug counterfeiting since it was first known around 1990 and it appears to be a

growing problem in both developing and developed countries. No country is free of this problem. The phenomenon has been growing in recent years due to the fact that counterfeiting methods are becoming more sophisticated.⁽³⁾ Counterfeit medicines are estimated as more than 10% of the global medicines market and in some developing countries it is thought to be as high as 50% as a result of lack legislations, poor enforcement of drug law, weak national drug regulatory authorities and shortage of drugs. One prediction is that global counterfeit drug sales will reach \$75 billion by 2010 more than 90% since 2005.⁽⁴⁾

Figure 1 shows the increasing numbers of counterfeit cases reported in FDA Counterfeit Drug Task Force Report: 2006 update.

Counterfeiting can be applied to both branded and generic products; counterfeit products could include products without active ingredients (32.1%); with incorrect quantities of active ingredients (20.2%); wrong ingredients (21.4%); with correct amounts of active ingredients but false packaging (15.6%); copies of original products (1%) and products with high impurities

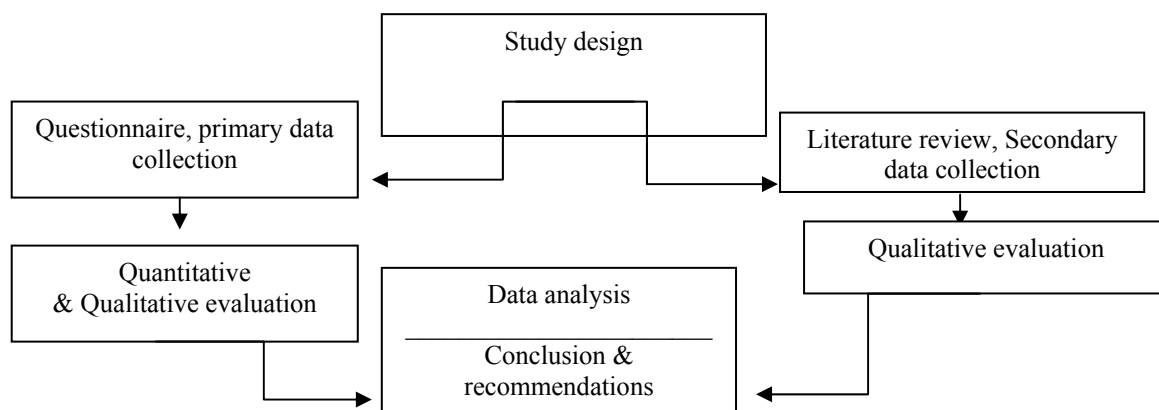


Fig 3: The study design

Table I: The field of work of the respondents

Respondents field	No. of respondents	%
Community pharmacist	47	75.8
Industrial pharmacist	11	17.7
Quality control pharmacy	4	6.5
Total no. of questionnaire	62	100

and contaminant levels (8.5%)⁽⁵⁾. These classes represent the different types of counterfeit drugs as shown in Figure 2.

There is no universal definition of counterfeit drugs; the definition varies from country to another, this limits the exchange of information between countries and limits the understanding of the true extent of the problem globally.⁽⁶⁾

As a consequence of this the WHO drafted a definition in 1999 which provides common universally accepted basis for drug counterfeiting to enhance understanding of the problem at global level: "A counterfeit medicine is one which is deliberately and fraudulently mislabelled with respect to identity and/or source. Counterfeiting can apply to both branded and generic products and counterfeit products may include products with the correct ingredients or with the wrong ingredients, without active ingredients, with insufficient active ingredients or with fake packaging."

Therefore, this study was conducted to identify pharmacist awareness and the contributing factors of drug counterfeiting in Jordan.

Methodology

The study was designed to identify pharmacist awareness and the contributing factors of drug counterfeiting in Jordan and to suggest possible

ways to combat the problem. One of the most efficient ways to address this objective is to complete a questionnaire, in addition to collecting information from the Jordanian Food and Drug Administration (JFDA). However, there was difficulty in collecting the required information from the JFDA, in addition to the limited published data related to the actual situation in Jordan.

The study design was based on qualitative and quantitative evaluation collected from the questionnaire, then the data collected was analysed to come up with results and conclusions as shown in Figure 3.

The questionnaire consisted of open ended and close ended questions; a first draft of the questionnaire was piloted and tested on four respondent pharmacists from Jordan. The questionnaire is shown in Appendix 1. The validity of the tool was assessed by experts in the field of the pharmacy with no modification. The study was conducted in Amman. The method of data collection was by a self reported questionnaire through distribution of the questionnaire to the participants in the field.

The sample size for this study was a total of 100 pharmacists selected from three different fields of pharmacy including community, industrial and quality control.

Table II: Are there penalties for drug counterfeiting?

Respondent's opinions	No. of respondents	%
Yes	39	62.9
No	20	32.3
Total	59	95.2
Missing	3	4.8
Total no. of questionnaires	62	100.0

Table III: Penalties for drug counterfeiting

Respondent's answers	No. of respondents	%	Penalty
Identified	9	14.5	Closure of the pharmacy
Not identified	53	85.5	
	62	100	Total
Identified	12	19.4	Prison for a period of time
Not identified	50	80.6	
	62	100	Total
Identified	12	19.4	Payment of a certain range of fine
Not identified	50	80.6	
	62	100	Total

Most respondents were working in community pharmacies as shown in (Table I) and 51.6% of respondents were males and 48.4% were females. Their mean age was 35 years. The questions were analyzed by using the SPSS system. The open ended questions were summarized first as shown in Appendix 2, and the most common answers were taken as variables as shown in Appendix 3.

Ethical Consideration

The proposal was submitted to the ethics committee of the Ministry of Health in Jordan for their formal permission and approval was secured.

Results

One hundred copies of the questionnaire were distributed by personal delivery with the assistance of four colleagues in Jordan. Sixty-two copies were completed and returned making the study response rate 62%.

Participant awareness of the drug counterfeiting laws and regulations:

The data analysis showed that 76% of respondents are aware of drug counterfeiting problems and the current laws and regulations in Jordan. However, there are differences in opinions about whether the regulations are extensive enough or not; 54.8% of respondents thought that they are while 43.5% thought that

they are not enough. Of the 15 respondents out of 27 respondents that did not think that the current laws and regulations are enough made suggestions to improve the situation. They suggested improving regulations on borders and performance of quality control tests, in addition to increasing the penalties (10 participants), increase the public awareness (3 participants), coordination between control bodies and more international efforts (1 participant), and finally fight favouritism (1 participant).

Around 63% of the respondents did not come across any case of counterfeiting themselves, on the other hand, 37% come across counterfeit cases of which more than 50% had come across several cases. Despite the pharmacists' awareness about the drug counterfeiting laws and regulations being good, it is not reasonable that around one third of them after excluding the missed answers (Table II), believe that there are no penalties on trading of counterfeit drugs in Jordan and this could be a serious situations for these pharmacists, especially when we know that most of the respondents were community pharmacists which are the main target for counterfeiters. If the spread of such an idea is popular among a large group of pharmacists, there should be an urgent need for more efforts to increase the general awareness about the problem and its implications.

Table IV: The degree of seriousness of drug counterfeiting

Respondent's opinions	No. of respondents	%
Very serious	30	48.4
Least serious	32	51.6
Total	62	100.0

Table V: The vulnerability of invasion by counterfeit drugs

Respondent's opinions	No. of respondents	%
Very easy	3	4.8
Easy	22	35.5
Difficult	34	54.8
Very difficult	2	3.2
Total	61	98.4
Missing	1	1.6
Total	62	100.0

The respondents who knew that there are penalties for drug counterfeiting gave different ranges of penalties that varied from the closure of the pharmacy to prison for a certain period of time and payment of a certain range of fine (Table III), but without giving the exact range of penalty for both time and fine payment. For the respondents who know that there are penalties for drug counterfeiting, around 61% of them believe that the existing penalties are enough while around 39% thought that they are not enough. Eight pharmacists, out of 22 respondents that did not think that the existing penalties for drug counterfeiting are enough, made suggestions to improve the situation by increasing fine payments and the period of imprisonment (4 participants), withdrawal of the licence of pharmacists who are involved in drug counterfeiting and not allowing them to work in this field again (3 participants), and finally only one pharmacist made a suggestion that the existing penalties are enough, but there is lack of strong commitment to their implementation.

Factors that might encourage drug counterfeiting:

The three major causes of drug counterfeiting according to the respondents were high prices of drugs (48%), lack of supervision and poor quality control lab tests (35.5%), and poor public awareness (16.5%). Regarding the degree of seriousness of the problem and vulnerability of invasion, the majority of the respondents thought that drug counterfeiting is a less serious problem

(51.6%) while 48.4% thought it is a very serious problem. In addition to that, 54.8% thought that it is difficult to invade Jordan by counterfeit drugs while 35.5% thought that Jordan could be invaded easily (Table IV & V). These variations in opinions may be due to the differences of pharmacists' experience and exposure to drug counterfeiting. Drugs that are susceptible to be counterfeited varied between three major groups of drugs: most of the answers showed that the drugs used for chronic diseases such as hypertension, diabetes and hyperlipidemia are more susceptible for counterfeiting, followed by expensive drugs such as sex enhancers, antiplatelets, Central Nervous System drugs, anticancer and antipsychotic drugs, and finally fast moving drugs such as analgesics, Non Steroidal Anti Inflammatory Drugs (NSAID) and antibiotics.

Discussion

Drug counterfeiting is a global problem; it has been reported in developing countries such as India, Peru, Niger, Nigeria, Southeast Asia and Pakistan as well as first world countries such as Unites States which resulted in establishing the Counterfeiting Drug Task Force.

Drug counterfeiting is a major health problem and has a major impact worldwide on the public, pharmaceutical companies as well as governments.

The FDA estimates that counterfeits make up more than 10% of the global market. Developing countries seem to be most affected,

Table IV: Recent examples of counterfeit medicines:

Counterfeit medicine	Country/Year	Report
1. Avastin (for cancer treatment)	United States of America, 2012	Affected 19 medical practices in the USA. The drug lacked active ingredient
2. Viagra and Cialis (for erectile dysfunction)	United Kingdom, 2012	Smuggled into the UK. Contained undeclared active ingredients with possible serious health risks to the consumer
3. Truvada and Viread (for HIV/AIDS)	United Kingdom, 2011	Seized before reaching patients. Diverted authentic product in falsified packaging
4. Zidolam-N (for HIV/AIDS)	Kenya, 2011	Nearly 3,000 patients affected by falsified batch of their antiretroviral therapy
5. Alli (weight-loss medicines)	United States of America, 2010	Smuggled into the USA. Contained undeclared active ingredients with possible serious health risks to the consumer
6. Anti-diabetic traditional medicine (used to lower blood sugar)	China, 2009	Contained six times the normal dose of glibenclamide. Two people died, nine people were hospitalized
7. Metakelfin (antimalarial)	United Republic of Tanzania, 2009	Discovered in 40 pharmacies. The drug lacked sufficient active ingredient

and counterfeiters invade most drugs, especially those which are used for the treatment of serious diseases. Jordan like many other countries has this problem; however its size is below the world average.

Jordan like many other countries has a smuggling problem of counterfeit drugs; however no accurate statistics appear to be available; for example in a presentation for stakeholders Meeting of Transparency Alliance (MeTA) in London last year Nuseirat⁽⁷⁾ (Head of National Drug Unit in JFDA) said that problems with counterfeit drugs was less than 5% of the world average and that no accurate statics were available but that it could be a growing problem. Arab Reporters for Investigative Journalism (ARIJ) mentioned that it is below the world average by 15% and pointed out that it is a decreasing problem due to the efforts from all concerned parties like MOH, JFDA, Jordanian Pharmaceutical Association (JPA), law enforcement agencies in collaboration with public security, Customs and health agencies. However, on these figures smuggling and counterfeit drugs on the Jordanian pharmaceutical market are below the world average.⁽⁷⁾

Overall, the problem does not lie in the exact percentage numbers, but in the harm caused by these counterfeit drugs through dangerous effects

ranging from minor problems to death especially when they are given to those in dire need of a medical intervention and in saving lives.⁽⁵⁻⁸⁾ For example, a total of 192,000 Chinese patients are reported to have died in 2001 from fake drugs and in the same year Chinese authorities closed 1.300 factories while investigating 480,000 cases of counterfeit drugs worth 57 million USD and in 2004, Chinese authorities arrested 22 manufacturers of grossly substandard infant milk powder and closed three factories after the death of over 50 infants.⁽⁹⁾

In Europe, counterfeit medicines available originally focused upon ‘lifestyle’ medicines, including erectile dysfunction and weight loss medicines. Counterfeiters are now also focusing on ‘lifesaving medicines’ including cancer and heart medicines. The European Union's 2007 pharmaceutical counterfeiting data shows that almost 40 per cent of counterfeit medicines seized by the EU originated in Switzerland, making the country the biggest importer of counterfeit medicines into the EU; India and the United Arab Emirates were second and third, respectively. The total volume of counterfeit pharmaceuticals seized by EU officials rose 51% in 2007. The highest numbers of items were seized in Belgium, France, Britain, and Spain.⁽¹⁰⁾

Weight and hair loss tablets, antidepressants, painkillers, anabolic steroids worth more than a

quarter million pounds (\$350,000 USD) worth of counterfeit, unlicensed, withdrawn, and controlled drugs were seized in England by the Medicines and Healthcare products Regulatory Agency (MHRA). The drugs are believed to be linked to an illegal online pharmacy selling prescription-only medicines around the globe. A further 250,000 pounds worth fake drug stash seized in an undercover operation.⁽¹¹⁾ The problem of counterfeit drugs was addressed internationally in Nairobi at the WHO Conference of Experts on the Rational Use of Drugs in 1985 for the first time.⁽¹²⁾ Recent examples of counterfeit medicines are shown in Table VI.

Conclusion and recommendations

From the questionnaire and the information found, it is possible to propose the following recommendations and implications of findings for future research:

- More statistical databases and national research on the percentage of drug counterfeiting in Jordan are needed to analyze and facilitate monitoring the size of problem.
- There needs to be strong commitment, shared responsibility and coordination from all control bodies with special emphasis on the three major diseases in Jordan namely, hypertension, diabetes and hyperlipidimia.
- There should be improved international collaboration to help in combating counterfeiting problem especially that the situation is not so good in the neighboring countries which have close borders with Jordan.
- It would be beneficial to have improvement in the quality control departments, but this would require increasing resources and the use of new technologies to facilitate detection of counterfeit drugs.
- A review should take place which determines whether the existing laws and regulations are extensive enough and the penalties are appropriate.
- The JFDA should consider increasing the pharmacists and public awareness in this

field by making better advertising campaigns.

Joint efforts of authorities at country level in Jordan have been increased recently including making regular raids not only on pharmacies but also on beauty salons, increasing the number of inspectors and making new amendments on the law of circulating drug counterfeiting by increasing penalties, all these contribute to the drop of drug counterfeiting in Jordan recently. However, it is suggested that the fight against drug counterfeiting is a shared responsibility between all parties to include: authorities, the industry, distributors and consumers and not the authorities' responsibility only. To achieve this goal an increase in awareness through campaigns is needed to target all concerned parties with special emphasis on the general public who presently have little knowledge on detecting counterfeit medicines.

The public should then be encouraged to inform responsible authorities such as the JFDA and police, particularly when there is an adverse reaction after taking medication or when they suspect any person to be selling or supplying drugs illegally.

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Appendix 1

Questionnaire on drug counterfeiting designed to study the current status and the size of problem in Jordan, I would therefore be grateful for your help by completing this questionnaire:
Please answer each question by placing a tick in the appropriate box. (The estimated time for completing the questionnaire is 15 minutes).

1. What field of pharmacy do you work on?

- Community pharmacist Industrial pharmacist Quality control pharmacy

2. Are you aware of the current law and regulations of drug counterfeiting?

- Yes No

3. Have you come across any direct experience of drug counterfeiting?

- Yes No

If yes please give details:

- One case two cases several cases substandard drugs

4. What factors do you think that might encourage drug counterfeiting?

5. Do you think the current law and regulations of drug counterfeiting are enough?

- Yes No

If no, and if you have a chance to improve the situation or make any changes, please give suggestions for improvement

6. What do you think the degree of seriousness of drug counterfeiting problem in Jordan?

- Very serious least serious

7. What types of drugs or diseases are more likely susceptible to drug counterfeiting?

8. How vulnerable do you think Jordan can be invaded by drug counterfeiting?

- Very easy Easy Difficult Very difficult

9. Are regulations for drug counterfeiting the same for imported and local manufactured drugs?

- Yes No

10. A. Are there penalties for drug counterfeiting?

- Yes No

If yes, do you know different ranges of penalties?

10. B. Do you think that they are enough?

- Yes No

If no, please give suggestions

Thanks for your time.

Appendix 2

Questionnaire open questions

Questionnaire Number	Factors that encourage drug counterfeiting	Suggestion to improve situation	Types of counterfeit drugs	Ranges of penalties	Suggestion to improve penalties
1.	Lack of supervision. Expensive drugs.	-	Hypertension drugs. Psychiatric drugs.	-	-
2.	No public awareness.	-	Heart disease drugs.	Closing the pharmacy. Paying fine penalties.	-
3.	Weak regulations. High prices of drugs.	-	Expensive drugs.		
4.	-	-	-	-	-
5.	Corruption, to make money. No supervision. Weak borders.	-	Cardiovascular diseases. Expensive drugs.	-	-
6.	Lack of public awareness. Invasion of pharmaceutical field by non certified persons. Variations of medicines prices.	Fighting favouritism	Sexual enhancers. Analgesics. Psychiatric drugs.	-	-
7.	Poor awareness.	-	Pain killers, Analgesics. Antibiotics.	-	-
8.	High prices of drugs. Absence of applications of law.	-	Heart disease drugs.	-	-
9.	-	-	-	-	-
10.	High prices of drugs. To make money. Corruption (lack of commitment of existing law).	-	Sexual enhancers. Heart disease drugs. Drugs used for chronic diseases.	Fine penalties. Jail.	-
11.	Invasion of pharmaceutical field by non certified people. Lack of supervision. The increase in the no. Of pharmacies opened to public.	-	-	-	-
12.	Lack of pharmacist awareness. Poor QC tests of each batch.	-	-	-	-
13.	Lack of pharmacist awareness.	-	Analgesics and cold preparations.	-	-
14.	Expensive drugs. Rapid gain of money.	More regulations on borders. More control on the internet. Public education.	Expensive drugs.	Closing the pharmacy. Withdrawal of licence. Payments of penalties and jail.	-

15.	-	-	Antibiotics.	-	-
16.	The increase in the no. Of pharmacists. High margin profit. Poor community culture.	-	Chronic disease drugs (antihyperlipidemia, hypertension). Expensive drugs. Cosmetics.	-	-
17.	High prices of drugs. Poor QC lab. Tests. Poor control from health authorities.	Improvement of QC lab. Performance. Monitoring of imported products.	Chronic diseases (diabetes, hypertension). Antibiotics. NSAID.	Closing the pharmacy.	Make more international efforts. Treat drug counterfeiting as narcotics.
18.	High prices of drugs. To gain money. Implementation of TRIPS doesn't allow local industry to produce new drugs.	International efforts. Treat drug counterfeiting as narcotics.	Diabetes drugs. Antiplatelet. Hypertension. NSAID.	Jail.	Make more international efforts. Treat drug counterfeiting as narcotics
19.	High prices of drugs. Quick profits. Lack of awareness.	-	Chronic diseases. Expensive drugs. Weight reduction products.	-	Increase the penalties up to 50,000 JD. Increase prison period to 3 years.
20.	High prices of drugs. Lack of awareness.	-	Hypertension and heart diseases	-	-
21.	High prices. Low availability of drugs in the market.	-	Diabetes. Hypertension. Chronic heart diseases.	-	-
22.	Lack of supervision. Profits. Lack of ethical awareness of some pharmacists.	-	Expensive drugs. Hypertension, antilipids. Cardiovascular diseases. Erectile dysfunction	Closing the pharmacy.	-
23.	Expensive drugs.	-	Imported drugs.	Penalties, withdraw of licence. Jail.	-
24.	To make money.	Increase the penalties. Increase awareness.	Chronic disease medications.	-	-
25.	Lack of supervision.	-	-	-	-
26.	Expensive drugs.	-	-	-	-
27.	Lack of supervision. Low availability of drugs.	-	-	-	-
28.	Lack of supervision.	-	-	-	-
29.	Lack of supervision.	-	-	-	-
30.	Drug abuse. Poly pharmacy.	Increase awareness.	Hypertension. Vitamins.	-	-
31.	To make money. High taxes of drugs make it expensive for pharmacists.	Close pharmacies.	Hypertension. Antilipids. Cardiac diseases and diabetes.	-	-

32.	Not enough penalties and law.	-	Antibiotics. Chronic diseases (HT and hyperlipidemia).	Pay money 200-1000 JD. Close pharmacy from 1 week -6 months.	Withdraw licence and not allow the pharmacists to work again.
33.	Lack of supervision. Low QC standards. Expensive drugs.	Increase penalties.	HT, antilipids. Antibiotics.	Payments. Jail.	Withdraw licence and not allow the pharmacists to work again.
34.	-	-	Antibiotics and cold preparations.	-	-
35.	Lack of supervision. High prices of drugs. Lack of awareness.	-	Sexual and impotency drugs. Chronic diseases and CVS drugs. CNS drugs.	Pay money. Jail.	-
36.	High prices of drugs. Fast movement of drugs.	More control for imported drugs.	HT, diabetes, CVS, obesity drugs and hyperlipidemia.	--	-
37.	-	-	-	-	-
38.	High prices. Poor awareness.	-	Antibiotics. Analgesics.	-	-
39.	-	-	Antibiotics. Diabetes.	-	-
40.	Limitations on generics	-	Expensive drugs.	-	-
41.	Drug smuggling. Limitations on generics.	Make generics more elastic and join agreements.	Expensive drugs.	-	Implementation of penalties must be restricted.
42.	Profits. Lack of supervision.	-	Antiplatelets (plavix). Sexual drugs (cialis). Antihyperlipid and diabetes.	-	-
43.	Profits. Lack of supervision.	-	Expensive drugs (plavix, cialis).	-	-
44.	Profits. Lack of supervision.	More control. Withdraw of pharmacist licence.	Expensive drugs. HT, diabetes.	-	-
45.	Lack of supervision.	-	Sexual drugs. Expensive drugs.	-	-
46.	-	-	Expensive drugs.	-	-
47.	Lack of awareness. Low of QC. Profits.	-	Expensive drugs. Chronic disease medications.	-	-
48.	-	-	Expensive drugs (cialis).	-	-
49.	Lack of supervision. Profits.	-	Diabetes. HT.	-	-
50.	Profits.	-	-	-	-
51.	-	-	-	-	-
52.	Lack of supervision. High benefits.	-	-	-	-

53.	High prices of drugs.	More supervision by the government.	Cosmetics. Drugs for weight loss.	-	-
54.	Law QC.	-	CNS drugs. OTC drugs. Cancer drugs.	-	Closing the pharmacy for longer time.
55.	High prices of drugs.	To be more serious in applying penalties.	Antiplatelet (plavix). HT, antidepressants	-	-
56.	High prices.	-	NSAID. HT.	-	-
57.	Lack of coordination between control bodies. Public awareness. High prices of drugs. Lack of supervision.	-	Chronic CVD. Sexual enhancers. High sales items (analgesics). Anticancer. Antibiotics.	3-5 years prison. 100-5000 JD fine. Penalty to pay double the price of original packs. Both penalties in addition to 3 rd penalty determined by court.	-
58.	High prices of drugs.	Regular raids and checking of pharmacies.	Cardiac disease drugs.	Close pharmacy. Fine payment.	Treating drug counterfeiting as narcotics.
59.	Lack of control. High prices of drugs.	-	HT. Expensive drugs.	Jail. Payment of fine. Both.	-
60.	To make money. High prices of drugs. Lack of supervision.	Increase fine payment. Withdraw of licence.	HT, diabetes. Analgesics. Expensive drugs.	Prison. Payment of fine.	Increase the period of prison and payment. Withdraw the licence.
61.	Lack of inspection. High prices of drugs.	-	Antibiotics. Analgesics. NSAID. Chronic disease drugs.	Closure of pharmacy. Jail.	-
62.	Poor QC. To make money.	-	HT. Expensive drugs. Sexual enhancers. Weight reduction drugs.	Payment of fine. Jail. Closing the pharmacy.	-

Appendix 3

The open question	The most common answers among respondents
Factors that encourage drug counterfeiting.	<ol style="list-style-type: none"> 1- Lack of supervision and poor QC lab. Tests. 2- Prices: high prices of drugs and profits. 3- Poor public awareness.
Suggestions to improve the situation.	<ol style="list-style-type: none"> 1- Improvement of regulations on borders, increasing penalties and performance of QC lab tests. 2- Increase public awareness. 3- More international cooperation. 4- Fighting favouritism.
Types of counterfeit drugs.	<ol style="list-style-type: none"> 1- Drugs used for chronic diseases. 2- Fast moving drugs. 3- Expensive drugs.
Ranges of penalties.	<ol style="list-style-type: none"> 1- Closure of the pharmacy. 2- Jail. 3- Payment of certain fine.
Suggestions to improve penalties.	<ol style="list-style-type: none"> 1- Increase fine penalties and the period of prison. 2- Withdrawing the pharmacists licence and not allowing them to work in this field again. 3- More commitment to implement the existing penalties.