DOI: 10.7860/JCDR/2018/28451.11136

Original Article

Health Management and Policy Section

General Public and Community Pharmacists Perception on Counterfeit Medicines: A Preliminary Cross-sectional Study in Qatar

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ABSTRACT

Introduction: One major contributing factor to the prevalence of counterfeit medicines in a country is the lack of knowledge and awareness of the society. Information on general public and healthcare professionals awareness and vulnerability towards counterfeit medicines in developing countries is limited.

Aim: To assess how the general public and pharmacists perceive counterfeit and substandard medicines and to evaluate their vulnerability level toward counterfeit medicines.

Materials and Methods: A cross-sectional study was conducted in Qatar where a prevalidated questionnaire was used to collect information about: a) demographic characteristics, b) attitude, c) subjective norm, d) motivation, and e) behavioural intentions of pharmacists and public regarding counterfeit medicines on a Likert-scale. A total of 190 questionnaires were distributed conveniently to the public and community pharmacists. Chi-square and independent t-tests were used at p-value of 0.05.

Results: One hundred ninety questionnaires were distributed to both community pharmacists and public, however, only 167 (87.8%) were collected which resulted in response rate. Most of the results of the survey (41 items) were not significant (p-value>0.05). Only questions about awareness towards counterfeit medicines, its societal consequences, the effect of price affordability and the effect of pressure exerted by relatives and friends on purchase intent of counterfeit medicines gave significant difference between public and pharmacists (p-value $\leq$ 0.05).

Conclusion: Overall findings suggested that there is no significant difference between pharmacists and public in the way they perceive counterfeit and substandard medicines. Both of them have the same susceptibility level toward counterfeit medicines. Both pharmacists and public have low-level of knowledge and moderate level of vulnerability to counterfeit and low-quality medicines.

Keywords: Awareness, Medicines supply, Vulnerable

INTRODUCTION

The purchase of counterfeit medicines is rapidly spreading worldwide with a rising trend at an alarming rate in the production, distribution and consumption [1]. Early in 1990s, Cordell W et al., stated that despite the concerted efforts and worldwide legal sanctions against the manufacturing and the consumption of counterfeit products, the problem continues to expand rapidly [1]. However, precise data on the scale of counterfeit medicines problem are not available, but despite that and the difficulties in measuring the extent of counterfeit medicines, the most widely cited estimates ranging from 5% to 10% of the global market [2-7], rising to 25% in Least Developing Countries (LDCs) [3,5,8,9]. These predictions showing wide scale of the phenomenon not only in the volume but also in the area covered and medicines replicated as well. The Pharmaceutical Security Institute showed that all the regions of the world experienced a pharmaceutical crime incident [10].

However, in recent years, with the growth in trafficking of counterfeit goods, greater interest in understanding consumer behaviour with regard to purchasing counterfeit goods has developed. This shift has occurred because without the demand, there would be no need for the supply. Qatar is expected to be affected by this growth in trafficking of counterfeit goods because of its geographical location. This is due to the shipment of goods and its border with the neighbouring countries.

Although, there is no official reports on the scale of counterfeit medicines distribution in the Qatari market, but the geographical location of Qatar neighbouring UAE represent a real threat to the pharmaceutical market in Qatar. UAE has an open economy depending mainly on trade, something makes it an important pathway of counterfeits. It is reported in the literature that counterfeit market across industries in the UAE is estimated to be around $1.02 billion a year and that over 245,000 fake items had been confiscated and destructed in raids by the Dubai's Department of Economic Development [11]. Also, reports from Saudi Arabia, stated that the value of confiscation at ports in 2014 was estimated to be around US$50 million with the number of counterfeit products exceeded 62 million [12]. Hence, with this geographical location, it is logical to anticipate hidden problem of counterfeit medicines in Qatari market despite the lack of statistics.

To explore this assumed presence of counterfeit medicines in the country, this study was designed to investigate vulnerability of the Qatari pharmaceutical market through investigating perceptions of suppliers (pharmacists) and consumers (public) of medicines about counterfeit medicines. To the authors knowledge, there have been no studies yet to explore counterfeit medicines purchase in Qatar.

The study was aimed to explore the factors that influence the intention to purchase counterfeit medicines and whether there are disparities between public and pharmacists in the way they perceive counterfeit medicines and secondly to evaluate the relationship between socio-demographic characteristics of the Qatari consumers and their perceptions toward purchase of counterfeit medicines.

MATERIALS AND METHODS

This cross-sectional study was carried out in Doha area, the capital city of Qatar between October 2014 and December 2014. The study was approved by the Qatar University IRB. The sample included 190 respondents selected conveniently from two distinct groups: community pharmacists and public only in Doha area, the capital city of Qatar. All community pharmacists and public who were fluent in either English or Arabic and agreed to be interviewed were included in the study. The public must also be residents of Qatar. If they were health personnel or under 18 years of age, they were excluded from the study.

The survey questionnaire was developed in two languages i.e., English and Arabic, and consisted of 50 questions distributed into five parts: a) demographic characteristics (12 items), b) attitude (25 items), c) subjective norm (two items), d) motivation (nine items), and e) behavioural intentions of pharmacists and public regarding counterfeit medicines (two items). Questions in sections (b) to (e) were prepared based on a five-point Likert scale, ranging from five (strongly agree) to one (strongly disagree). This scale was used to assess the level of vulnerability to counterfeit medicines; it depends on the total score: low-level (151-190), moderate level (81-150), and high-level (38-80). The same survey questionnaire was used for both the pharmacists and public. The vulnerability score was tested for normality. The questionnaire was validated (Cronbach's alpha=0.862) and was already used in a previous study [13].

STATISTICAL ANALYSIS

Collected data was statistically analysed using SPSS version 22.0 (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.). Both descriptive and inferential statistics were applied. Chi-square test and two sample t-test were used for statistical analysis at p-value of 0.05.

RESULTS

Demographic Characteristics

One hundred ninety surveys were distributed to both community pharmacists and public, however, only 167 (87.8%) were collected which resulted in response rate. Number of pharmacists was 75 (44.9%), whereas number of public respondents was 92 (55.1%) [Table/Fig-1].

Disparities between Public and Pharmacists

Analysis showed that there was no significant difference between public and pharmacists in the way they perceive counterfeit medicines in most of the surveyed items (p-value≥0.05). However, results revealed significant differences (p≤0.05) for four items [Table/Fig-2]. First, to investigate the awareness of sale of counterfeit medicines in Qatar; both public and pharmacists were asked direct question about their awareness about counterfeit and substandard medicines; pharmacists have higher awareness (p=0.05). Similarly, results showed significant difference between public and pharmacists regarding their awareness about the societal consequences of purchasing counterfeit medicines with pharmacists having higher awareness (p=0.003). On the other hand, results showed significant difference in perception about

	Pharmacists n (%)	Public n (%)	Total
Respond Categories	75 (44.9%)	92 (55.1%)	167
Age (years)			
(18-27)	19 (25.3%)	46 (50%)	167
(28-37)	40 (53.3)	14 (15.2%)	
(38-47)	12 (16)	15 (16.3%)	
≥48	4 (5.3)	17 (18.5%)	
Sex			
Male	48 (64%)	24 (26.1%)	72
Female	27 (36%)	68 (73.9%)	95
Educational level			
Public		Pharmacists	
Primary school	2 (2.2)	Bachelor degree	68 (90.66)
Secondary school	2 (2.2)	Pharm-D	5 (6.6)
High school	16 (17.4)	Master degree	2 (2.66)
University	72 (78.3)		
Total	92		75

[Table/Fig-1]: Demographic characteristics of the respondents.

Statements	Strongly Agree n (%)	Agree n (%)	Do Not Know n (%)	Disagree n (%)	Strongly Disagree n (%)	p-value
1. Registered medicines are often of better quality than non-registered medicines.						
• Pharmacist	40 (53.3)	23 (30.7)	3 (4.0)	8 (10.7)	1 (1.3)	0.847
• Public	48 (52.7)	26 (28.6)	6 (6.6)	8 (8.8)	3 (3.3)	
2. Non-registered medicines are just as good as registered medicines.						
• Pharmacist	2 (2.7)	11 (14.7)	12 (16.0)	39 (52.0)	11 (14.7)	0.451
• Public	1 (1.1)	10 (11.0)	25 (27.5)	43 (47.3)	12 (13.2)	
3. Purchasing non-registered medicines is worthless.						
• Pharmacist	24 (32.4)	24 (32.4)	10 (13.5)	14 (18.9)	2 (2.7)	0.20
• Public	15 (16.7)	21 (23.3)	15 (16.7)	36 (40.0)	3 (3.3)	
4. Non-registered medicines are not worth buying.						
• Pharmacist	19 (26.4)	28 (38.9)	5 (6.9)	20 (27.8)	0 (0.0)	0.312
• Public	19 (20.9)	28 (30.8)	14 (15.4)	29 (31.9)	1 (1.1)	
5. Registered medicines are more reliable than non-registered.						
• Pharmacist	31 (41.3)	32 (42.7)	2 (2.7)	8 (10.7)	2 (2.7)	0.16
• Public	54 (59.3)	21 (23.1)	9 (9.9)	5 (5.5)	2 (2.2)	
6. Registered medicines perform much better than non-registered medicines.						
• Pharmacist	25 (33.3)	29 (38.7)	6 (8.0)	14 (18.7)	1 (1.3)	0.43
• Public	25 (27.5)	28 (30.8)	24 (26.4)	12 (13.2)	2 (2.2)	
7. Registered medicines are worth the money they cost.						
• Pharmacist	24 (32.0)	35 (46.7)	7 (9.3)	8 (10.7)	1 (1.3)	0.801
• Public	29 (31.9)	49 (53.8)	6 (6.6)	6 (6.6)	1 (1.1)	

Statements	Strongly Agree n (%)	Agree n (%)	Do Not Know n (%)	Disagree n (%)	Strongly Disagree n (%)	p-value
8. Overall, my cognitive believe regarding the attributes of non-registered medicines is negative.						
• Pharmacist	17 (23.3)	30 (41.1)	3 (4.1)	21 (28.8)	2 (2.7)	0.497
• Public	26 (28.3)	30 (32.6)	9 (9.7)	25 (27.2)	2 (2.2)	
9. I would describe my thoughts and feelings towards non-registered medicines as ambivalent.						
• Pharmacist	5 (7.1)	28 (40.0)	6 (8.6)	26 (37.1)	5 (7.1)	0.089
• Public	11 (12.1)	36 (39.6)	18 (19.8)	19 (20.9)	7 (7.7)	
10. The risk that I take when I buy non-registered medicine is high.						
• Pharmacist	24 (32.4)	32 (43.2)	3 (4.1)	15 (20.3)	0 (0/0)	0.459
• Public	27 (29.3)	43 (46.7)	7 (7.6)	13 (14.1)	2 (2.2)	
11. There is high probability that the non-registered medicine doesn't work.						
• Pharmacist	15 (20.0)	40 (53.3)	5 (6.7)	14 (18.7)	1 (1.3)	0.366
• Public	23 (25.0)	41 (44.6)	14 (15.2)	13 (14.1)	1 (1.1)	
12. Spending money with non-registered medicine might be a bad decision.						
• Pharmacist	18 (24.0)	36 (48.0)	6 (8.0)	15 (20.0)	0 (0.0)	0.423
• Public	20 (21.7)	42 (45.7)	12 (13.0)	15 (16.3)	3 (3.3)	
13. Generally speaking, non-registered medicines can be very dangerous.						
• Pharmacist	23 (30.7)	24 (32.0)	11 (14.7)	16 (21.3)	1 (1.3)	0.400
• Public	19 (20.9)	41 (45.1)	14 (15.4)	15 (16.5)	2 (2.2)	
14. Purchasing non-registered medicines is quite risky.						
• Pharmacist	26 (34.7)	29 (38.7)	5 (6.7)	15 (20.0)	0 (0.0)	0.298
• Public	25 (27.2)	44 (47.8)	9 (9.8)	12 (13.0)	2 (2.2)	
15. When I buy something, I prefer not taking risks.						
• Pharmacist	35 (46.7)	34 (45.3)	1 (1.3)	5 (6.7)	0 (0.0)	0.705
• Public	43 (46.7)	36 (39.1)	2 (2.2)	10 (10.9)	1 (1.1)	
16. I like to be sure the product is a good one before buying it.						
• Pharmacist	43 (57.3)	32 (42.7)	0 (0.0)	0 (0.0)	0 (0.0)	0.335
• Public	52 (56.5)	36 (39.1)	1 (1.1)	3 (3.3)	0 (0.0)	
17. I don't like to feel uncertainty when I buy something.						
• Pharmacist	35 (46.7)	38 (50.7)	0 (0.0)	1 (1.3)	1 (1.3)	0.114
• Public	39 (42.4)	43 (46.7)	4 (4.3)	6 (6.5)	0 (0.0)	
18. I always avoid risky things.						
• Pharmacist	36 (48.0)	32 (42.7)	0 (0.0)	6 (8.0)	1 (1.3)	0.658
• Public	43 (47.3)	38 (41.8)	0 (0.0)	10 (11.0)	0 (0.0)	
19. Generally speaking, the higher the price of a medicine, the higher the quality.						
• Pharmacist	5 (6.7)	15 (20.0)	4 (5.3)	44 (58.7)	7 (9.3)	0.170
• Public	9 (9.8)	25 (27.2)	12 (13.0)	41 (44.6)	5 (5.4)	
20. You have always to pay a bit more for the best.						
• Pharmacist	6 (8.0)	32 (42.7)	6 (8.0)	26 (34.7)	5 (6.7)	0.451
• Public	13 (14.1)	43 (46.7)	9 (9.8)	24 (26.1)	3 (3.3)	
21. The price premium of registered medicine compare to non-registered medicine is mostly justified.						
• Pharmacist	5 (6.7)	47 (62.7)	8 (10.7)	12 (16.0)	3 (4.0)	0.132
• Public	11 (12.0)	39 (42.4)	15 (16.3)	20 (21.7)	7 (7.6)	
22. The price of a medicine is a good indicator of its quality.						
• Pharmacist	2 (2.7)	19 (25.3)	7 (9.3)	41 (54.7)	6 (8.0)	0.275
• Public	8 (8.7)	22 (23.9)	14 (15.2)	39 (42.4)	9 (9.8)	
23. Purchasing non-registered medicines harm the economy of my country through loss of taxation revenue.						
• Pharmacist	17 (22.7)	37 (49.3)	14 (18.7)	3 (4.0)	4 (5.3)	0.067
• Public	13 (14.3)	34 (37.4)	30 (33.0)	10 (11.0)	4 (4.4)	
24. Purchasing non-registered medicines undermining the national health care system of my country.						
• Pharmacist	20 (27.0)	40 (54.1)	4 (5.4)	9 (12.2)	1 (1.4)	0.184
• Public	18 (19.6)	44 (47.8)	15 (16.3)	12 (13.0)	3 (3.3)	

Statements	Strongly Agree n (%)	Agree n (%)	Do Not Know n (%)	Disagree n (%)	Strongly Disagree n (%)	p-value
25. Purchasing non-registered medicines discourage manufacturers of registered medicines from investment in research and development and hence slow development of new effective medicines.						
• Pharmacist	16 (21.3)	36 (48.0)	6 (8.0)	17 (22.7)	0 (0.0)	0.003
• Public	9 (9.9)	34 (37.4)	22 (24.2)	20 (22.0)	6 (6.6)	
26. My relatives and friends approve my decision to buy non-registered medicines.						
• Pharmacist	2 (2.7)	24 (32.4)	11 (14.9)	28 (37.8)	9 (12.2)	0.092
• Public	4 (4.3)	16 (17.4)	27 (29.3)	35 (38.0)	10 (10.9)	
27. My relatives and friends think that I should buy non-registered medicines.						
• Pharmacist	0 (0.0)	8 (10.8)	5 (6.8)	50 (67.6)	11 (14.9)	0.045
• Public	3 (3.3)	6 (6.7)	17 (18.9)	47 (52.2)	17 (18.9)	
28. Generally speaking, one of the reasons for buying n on-registered medicines is that the prices of registered medicines are unaffordable.						
• Pharmacist	1 (1.3)	30 (40.0)	6 (8.0)	38 (50.7)	0 (0.0)	0.00
• Public	8 (8.8)	31 (34.1)	17 (18.7)	26 (28.6)	9 (9.9)	
29. Generally speaking, one of the reasons for buying non-registered medicines is that it has affordable prices.						
• Pharmacist	1 (1.3)	25 (33.3)	13 (17.3)	35 (46.7)	1 (1.3)	0.099
• Public	7 (7.7)	35 (38.5)	17 (18.7)	28 (30.8)	4 (4.4)	
30. One of the reasons for buying non-registered medicines is that I would not be ready to pay the price of the registered medicines although I prefer them.						
• Pharmacist	3 (4.0)	18 (24.0)	7 (9.3)	43 (57.3)	4 (5.3)	0.156
• Public	4 (4.4)	30 (33.0)	11 (12.1)	35 (38.5)	11 (12.1)	
31. Unaffordable prices of registered medicines may cause me to buy non-registered medicines.						
• Pharmacist	3 (4.0)	27 (36.0)	3 (4.0)	37 (49.3)	5 (6.7)	0.287
• Public	6 (6.6)	33 (36.3)	9 (9.9)	33 (36.3)	10 (11.0)	
32. Generally speaking, one of the reasons for buying non-registered medicines is that registered medicines are not always available.						
• Pharmacist	5 (6.7)	33 (44)	5 (6.7)	27 (36)	5 (6.7)	0.307
• Public	7 (7.6)	34 (37)	15 (16.3)	27 (29.3)	9 (9.8)	
33. Non availability of registered medicines may cause me to buy non-registered medicines.						
• Pharmacist	5 (6.8)	30 (40.5)	2 (2.7)	30 (40.5)	7 (9.5)	0.177
• Public	11 (12)	40 (43.5)	8 (8.7)	24 (26.1)	9 (9.8)	
34. Generally speaking, one of the reasons for buying non-registered medicines is that registered medicines are not always accessible.						
• Pharmacist	4 (5.3)	28 (37.3)	6 (8)	34 (45.3)	3 (4)	0.415
• Public	7 (7.6)	39 (42.4)	10 (10.9)	29 (31.5)	7 (7.6)	
35. For me, purchasing non-registered medicine would not be an option even if the registered medicine is not accessible.						
• Pharmacist	18 (24)	34 (45.3)	4 (5.3)	16 (21.3)	3 (4)	0.068
• Public	10 (10.9)	37 (40.2)	12 (13)	26 (28.3)	7 (7.6)	
36. Non accessibility of registered medicines may cause me to buy non-registered medicines.						
• Pharmacist	3 (4)	28 (37.3)	4 (5.3)	33 (44)	7 (9.3)	0.091
• Public	4 (4.3)	39 (42.4)	15 (16.3)	25 (27.2)	9 (9.8)	
37. It is likely that I may buy non-registered medicine in the future.						
• Pharmacist	4 (5.3)	22 (29.3)	14 (18.7)	25 (33.3)	10 (13.3)	0.182
• Public	4 (4.3)	28 (30.4)	28 (30.4)	17 (18.5)	15 (16.3)	
38. Still there is a chance that I say favorable things about non-registered medicines.						
• Pharmacist	3 (4)	22 (29.3)	14 (18.7)	30 (40)	6 (8)	0.242
• Public	6 (6.5)	37 (40.2)	18 (19.6)	22 (23.9)	9 (9.8)	
39. Are you aware about counterfeit and substandard medications?	Yes			No		
• Pharmacist	57 (79.2)			15 (20.8)		0.002
• Public	52 (56.5)			40 (43.5)		
40. Do think that non-registered medications could be a substandard or counterfeit?	Yes			No		
• Pharmacist	59 (78.7)			16 (21.3)		0.327
• Public	76 (82.6)			16 (17.4)		
41. Do you think that substandard or counterfeit medications are existing in Qatar?	Yes			No		
• Pharmacist	32 (42.7)			43 (57.3)		0.449
• Public	36 (40.4)			53 (59.6)		

[Table/Fig-2]: Comparisons of attitude, subjective norm, motivation and behavioural intentions to purchase counterfeit medicines between pharmacists and public.
The total number of respondents are not equal to 75 or 92 due to missing values i.e. not responding to the particular questions

the effect of pressure exerted by relative and friends (p=0.045), and affordability of medicine price (p=0.002) on purchase intention of counterfeit medicines, with public perceiving stronger effect for both factors. Results of this study showed no relationship between socio-demographic characteristics and purchase intent of counterfeit medicines.

Vulnerability towards Counterfeit Medicines

Difference between community pharmacists and public in vulnerability towards counterfeit medicines was not significant (p-value=0.833) [Table/Fig-3].

In addition, there is no significant difference for both groups in terms of level of vulnerability (low, moderate and high) towards counterfeit medicines (p-value=0.550) [Table/Fig-4].

Respond categories	Mean±SD	*p-value
Pharmacists	131.8±13.6	0.833
Public	131.3±15.4	
Total	131.5±14.6	

[Table/Fig-3]: Average vulnerability score towards counterfeit medicines.
SD-Standard Deviation, *Independent t-test was used for the analysis

Vulnerability level	Pharmacists	Public	*p-value
Low	5 (7.8%)	9 (10.7%)	0.550
Moderate	59 (92.2%)	75 (89.3%)	
High	-	-	

[Table/Fig-4]: Level of vulnerability towards counterfeit medicines.
*Chi-square test was used for the analysis; Only respondents who filled up all relevant questions were included in the analysis

DISCUSSION

Results of this study suggest very few disparities between pharmacists and public in perceiving counterfeit medicines phenomenon. Among these disparities is the level of awareness about sale of counterfeit medicines in Qatar where pharmacists showed higher awareness than public. This may highlight the importance of involving pharmacists in educating and raising the awareness of public about the problem of counterfeit medicines. It is not peculiar for the public to have low knowledge and awareness about the existence of counterfeit medicines in the market as this seems to be a common problem hindering the efforts to combat sale of counterfeit medicines even in the developed world. A survey conducted in Europe revealed that only 18% of the respondents were aware about the presence and sale of counterfeit medicines in the market [14]. Hence, low knowledge about the presence of counterfeit medicines in the market is a serious worldwide problem and it needs to be addressed and tackled. It is not logical to continue neglecting this problem especially in the light of findings of some studies which presented the possibility of combating counterfeiting through changing consumers behaviour [15].

Another disparity is the difference between public and pharmacists regarding their awareness about the societal consequences of purchasing counterfeit medicines where, again, pharmacists showed higher awareness. In fact, previous study conducted in developing country supported the notion that messages highlighting societal consequences such as its chilling effect on the economy, its tendency to discourage companies from investments in research and developments, the hazardous labour conditions found in countries engaged in drug counterfeiting, undermining the official health system, loss of jobs, illegal nature of the behaviour (buying counterfeit) implying social stigma, and potential link to organised crime that would profit from counterfeit purchases might not be strong enough to discourage public from buying the counterfeits as consumers in developing countries are not well familiar with these consequences [15-17]. In fact, weak discouraging effect of these societal consequences of drug counterfeiting was not reported only in developing countries, but also even among consumers in developed countries. A survey in USA investigated the effects of awareness of societal consequences on the purchase intent of three counterfeit goods, among them the pain reliever Tylenol®, reported that awareness of societal consequences does not influence the purchase intent [18].

On the other hand, stronger influence on public than on pharmacists was shown when effect of family and friends, and effect of affordability of medicines price were explored. Regarding family and friends, the findings of this study show the strength of their influence in shaping the decision of consumers in Qatar. According to the public opinion, their relatives and friends really encourage them to purchase non-registered medicines. This finding is very important as it can be exploited in discouraging counterfeit medicines purchase behaviour. In fact, this finding is consistent with previous literature which reported the influence of family and friends on consumer's decision to engage in a deviant behaviour [17,19,20]. When it comes to the effect of affordability of medicines price on purchase intention of counterfeit medicines, Qatari consumers seem to be consistent with other consumers studied in previous literature who link prices and willingness to purchase counterfeits [1,21-25]. The public tends to purchase unregistered medicines due to the unaffordability of registered medicines.

Unlike many previous studies which addressed the importance of demographic factors in the purchase intent of counterfeits [15,26,27], results from this study suggest that all demographic factors such as education, age and gender have no effect on counterfeit medicine purchase decision. This may be due to the fact that counterfeit purchase is a complex phenomenon and could not be easily linked to one factor or another but, moreover, strongly affected by the broader cultural context [28-30].

Finally, it is not surprising to find no high vulnerability to counterfeit medicines among Qatari people, both public or pharmacists, as Qatari have very high GDP. It was documented in previous literature that the main reason for the increment in vulnerability to counterfeit medicines among consumers is the unaffordable prices of medicines [16]. However, based on the level of vulnerability to counterfeit medicines in the moderate level (89.3% of public and 92.2% of pharmacists), it is still a worrying finding.

This study has laid the ground for further long-term studies on distribution and sale of counterfeit medicines in the pharmaceutical market in Qatar and neighbouring countries. By assessing the factors enhancing vulnerability to counterfeit medicines in the Arab and Gulf Cooperation Council (AGCC) countries, an effective collaboration in designing more efficient plan to combat the problem could be set.

In future studies, including all AGCC countries is recommended. A larger sample size representing other health professionals should be considered; otherwise, generalisability of the study findings may be compromised. Nevertheless, the findings of the current study enhance the knowledge about perceptions regarding counterfeit medicines phenomenon among relatively reasonable group of pharmacists and public, in atleast one country in the AGCC.

LIMITATION

There are few aspects that have affected the generalisability of the study findings: study duration, sample size, subject selection and survey responses. The study was conducted within a short period with a small sample size. It is the intention of the researcher to conduct a preliminary study prior to a nationwide study. The subjects were also selected using a non-random method which could cause a bias sample. Furthermore, due to the nature of a survey method, the responses were based on the subjects self-perception and they may not feel encouraged to provide accurate and honest answers. Few respondents were not included in some of the analysis e.g.,

level of vulnerability, because of not responding to all of the required questions. Thus, the total score could not be calculated.

CONCLUSION

Overall findings of the study suggested that there is no significant difference between pharmacists and public in the way they perceive counterfeit and substandard medicines and both of them have the same susceptibility level toward counterfeit medicines. Both pharmacists and public have low-level of knowledge and moderate level of vulnerability to counterfeit and low-quality medicines. The problem of counterfeit and poor-quality medicines has to be extensively addressed, and more education and awareness among the society are needed.

ACKNOWLEDGEMENTS

This work was supported by the Qatar University Student Grant [grant numbers: QUST-CPH-Fall-14/15-11].

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FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **Mar 17, 2017**
Date of Peer Review: **May 05, 2017**
Date of Acceptance: **Oct 16, 2017**
Date of Publishing: **Jan 01, 2018**