



ORIGINAL ARTICLE

General public knowledge, perceptions and practice towards pharmaceutical drug advertisements in the Western region of KSA



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Abstract This study aims to examine general public knowledge and behavior toward pharmaceutical advertisements in the Western part of KSA. A cross sectional convenience sampling technique was used in this study. A total of 1445 valid questionnaires were received and analyzed using SPSS version 16 at alpha value of 0.05. Majority of respondents were aware of different types of drugs to be advertised and drug advertisements should seek approval from the health authorities. Television and Internet showed the highest effect on consumers. Almost half of the participants preferred an advertised drug over non-advertised one. Most of the respondents indicated that the quality of frequently advertised drugs is not better than those prescribed by the doctors. Majority of participants had positive beliefs toward advertised drugs concerning their role in education and spreading of awareness among the public. Pharmaceutical advertisements harm the doctor–patient relationship as evidenced by one-third of the investigated sample. Moreover, majority of the participants mentioned that they would consult another doctor or even change the current doctor if he/she refused to prescribe an advertised medication. Results of this study could be used to develop awareness programs for the general public and try to enforce the regulations and policies to protect the general public and patients from the business oriented pharmaceutical companies and drug suppliers.

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1. Introduction

Pharmaceutical companies have been spending a great percent of sales on pharmaceutical advertising (Osinga et al., 2010; McFadden et al., 2007). General public, who are believed to have a major influence on prescribing decisions, were targeted from most pharmaceutical companies.

Direct-to-consumer advertising (DTCA) is banned in most developed countries, except the USA and New Zealand (Hanna Toiviainen et al., 2004; Elizabeth et al., 2006).

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Pharmaceutical promotion is regulated by the Code of Conduct for Prescription (Ethical) Products (Pharmaceutical Association of Malaysia, 2008). Under this guideline, only medical professionals can receive promotional material for prescription drugs. Pharmaceutical companies are not permitted to advertise prescription products directly to the public. In reality, pharmaceutical industries try to reach the general public whether directly or indirectly.

Pharmaceutical companies spend large amounts of their sales dollars on promotions for two reasons; to inform and persuade (Dev et al., 1993). For many doctors, especially those who have been practicing medicine for a long time reported that drug promotions are major sources of new drug information which play a major role in their decision making (Vancelik et al., 2007; Katia et al., 2005; Ahmad et al., 2011). However, it should be noted that promotion efforts are not only confined to the prescribers, but also to the public.

General public get their information about medicines from many sources, such as television (TV), internet, magazines, health professionals, radio, and newspapers (Närhi and Helakorpi, 2007). Therefore, influencing general public through these Media might affect prescribing and dispensing decisions. General public might have different responses to pharmaceutical advertisements. These responses varied from one person to another according to their knowledge and perceptions toward pharmaceutical advertisements.

To the best of our knowledge, no studies were planned and implemented to observe public knowledge, perceptions and practice in response to the pharmaceutical advertisements. Hence, this study aimed to evaluate the general public knowledge and perceptions toward pharmaceutical advertisements as well as to evaluate the impact of pharmaceutical advertisements on the decisions made by the general public regarding medication selection. Expected outcomes of this study could be utilized by healthcare decision makers for developing awareness programs and development of policies for regulating pharmaceutical promotion in the Kingdom of Saudi Arabia.

2. Methodology

2.1. Study design

A cross-sectional study design was carried out in the Western region of Saudi Arabia which included Taif, Makkah and Jeddah. One thousand and five hundred Questionnaires were distributed to the general public using the non probability convenience sampling technique.

2.2. Data collection tool: The questionnaire

The questionnaire was developed after an extensive literature review on the current issue. Face and content validation were done by a group of experts from the Clinical Pharmacy Department at the Taif University. Questionnaire was divided into six sections. The first section consisted of seven demographic questions: gender, age, nationality, marital status, educational level, location of work and residence. The second section comprised of six questions to explore respondents' knowledge about pharmaceutical advertisement. The third section included questions to explore the impact of different tools

used for pharmaceutical advertisements. Section four included 18 questions to measure respondents' perceptions toward pharmaceutical advertisements. Section five contained a question regarding the type of information that respondents usually look for. The last section investigated the impact of pharmaceutical advertisements on respondents' drug selection. Questionnaire was first prepared in English language and then translated into Arabic Language. The translated Arabic version of the questionnaire was then validated by experts from the Clinical Pharmacy Department at the Taif University and then tested on 20 respondents to get their feedback and make any modifications on the questionnaire. Respondents' feedback was considered in the final version of the questionnaire which was used in this study.

2.3. Inclusion and exclusion criteria

Respondents of this study met the following three criteria: (1) they were 16 years old and above, (2) able to read and write in Arabic, and (3) agreed to give a verbal informed consent. Whereas those below the age of 16 years, unable to read or write in Arabic or refused to give the informed consent were excluded from this study.

2.4. Data collection technique

Data collectors met with the respondents in a range of public areas, such as restaurants, shopping malls, bus stations and hospitals. First, data collectors introduced themselves to the respondents and briefed them about the study. Then, they informed them that all data will be kept confidential and their participation in the study will be voluntary. Once the respondents gave their verbal consent to participate in the study, data collectors passed them the questionnaire which needed 10–15 min for completion.

2.5. Statistical analysis

Data obtained from this survey were coded, entered and then analyzed using the Statistical Package for Social Sciences (SPSS) Version 16. Descriptive results were presented as frequencies and percentages whereas the Chi-square and Fisher Exact tests were used to determine the association between the general public demographic profiles and their perceptions about medicines. P -value < 0.05 was considered significant.

3. Results

Table 1 shows the demographics of the respondents. A total of 1445 respondents successfully responded to this study. Majority of them were males and Saudi nationals with the age group between 20 and 29 years.

Table 2 summarizes respondents' understandings toward pharmaceutical advertising. Majority of respondents were aware that only drugs without side effects are allowed to be advertised (57%), medical advertisements should seek government approval (73.4%), and only registered drugs are allowed to be advertised (52.8%). In addition, 50% of respondents said that direct advertising of OTC products to the public is allowed whereas 41% said that direct advertising of prescribed

Table 1 General characteristics of the respondents.

	Demographic characteristics	Frequencies (<i>n</i>)	Percentages (%)
Gender	Male	1402	97.0
	Female	44	3.0
Age	≤20	409	28.3
	20–29	602	41.6
	30–39	180	12.4
	≥40	255	17.6
Nationality	Saudi	1412	97.6
	Non Saudi	34	2.4
Education level	Informal education	5	0.3
	Primary school	45	3.1
	Secondary school	122	8.4
	Tertiary school	1274	88.1
Marital status	Single	1007	69.6
	Married	424	29.3
	Widowed/Divorced	15	1.0
City name	Jeddah	236	16.3
	Makkah	274	18.9
	Taif	936	64.7
Residence location	Rural	1364	94.3
	Urban	82	5.7
Working	Health related	638	44.1
	Non health related	808	55.9
Any family members job is health related?	Yes	592	40.9
	No	854	59.1

drugs to the public is allowed. City of living, age, marital status and educational level showed significant variations among responses.

The influence of advertisements on different media is shown in Table 3. Television and internet have the highest influence on our respondents (63.8% and 56.2%, respectively). Advertisements on radio and leaflets showed the lowest influence on our respondents (38.0% and 38.3%, respectively). City of living, age, marital status and educational level showed significant variations ($p < 0.05$) among responses. A higher proportion of Makkah residents showed good influence of advertisements on television, health related magazines and internet. Whereas, a higher percentage of respondents showed an average influence of advertisements on radio, health related magazines and internet. Television and health related magazines showed an excellent influence on respondents with a family member working in a health related job. A higher proportion of married respondents showed a neutral influence of advertisements on radio, health related magazines, pamphlets, friends and family members. On the other hand, a higher percentage of respondents without formal education showed an excellent influence of advertisements on television and radio.

Table 4 entails respondents' perceptions regarding pharmaceutical advertisements. Almost half of our respondents (46%) believed that advertised drugs are better than non-advertised drugs. Whereas only 58% of the respondents disagreed that the quality of the frequently advertised products to be better than those prescribed by healthcare professionals. In addition, more than half of the respondents (54%) believed that phar-

maceutical advertisements make the drugs look better than their reality. Moreover, only 44% of our respondents believed that pharmaceutical advertisements provide reliable information about the advertised products. On the other hand, 52% of the respondents believed that pharmaceutical advertisements provide information to educate them about their medical conditions and help them to have better dialog with their doctors about their health conditions (60%). City of living, age, marital status and educational level showed significant variations among responses.

Table 5 summarizes the type of information that the respondents are interested from any pharmaceutical advertisement. Side effects and uses of the medication were the main things that the investigated sample is looking for once they read a pharmaceutical advertisement (67.6% and 42.6%, respectively). Whereas ease of use was the last thing respondents were interested to read from the advertisement (10.3%). City of living, age, marital status and level of education showed considerable differences among responses. A higher proportion of Makkah residents, those with more than 40 years of age, and without health related family member, answered no to the statements in Table 5.

Table 6 shows the influence of pharmaceutical advertisements on respondents' decisions in drug selection. Drug advertisements showed a median effect on the selection of respondents to their drugs. Around one-third of the respondents (31.6%) would recommend advertised drugs to their friends and family members. In addition, almost 35% of respondents will request their doctor to prescribe them an advertised drug and more than 60% of respondents said that

Table 2 Respondents' understandings to pharmaceutical advertising.

Section	Responses					Chi-square test exact <i>p</i> -values				
	(n) (%)					<i>(p</i> < 0.05)				
	Yes	No	Not sure	City	Age	Work	Marital status	Education level	Residence location	Gender
Only drugs without any side effects are allowed to be advertised to the public	832 (57.9)	398 (27.7)	208 (14.5)	<0.001	<0.001	<0.001	<0.001*	<0.001*	0.165	0.771
Medical advertisements should seek government approval	1059 (73.4)	284 (19.7)	100 (6.9)	<0.001	<0.001	<0.001	<0.001*	<0.001*	0.453	0.060*
Only registered drugs are allowed to be advertised	759 (52.8)	503(35.0)	175(12.2)	<0.001	<0.001	<0.001	<0.001*	<0.001*	0.326	0.040
Direct advertising of prescribed drugs to the public is permitted	586 (41.0)	595 (41.6)	248(17.4)	<0.001	<0.001	<0.001	<0.001*	<0.001*	0.113	0.218
Direct advertising of over the counter products (non prescribed drugs) to the public is permitted	714 (49.9)	524 (36.6)	192 (13.4)	<0.001	<0.001	<0.001	<0.001*	<0.001*	0.007	0.029
Only safe medicines are allowed to be advertised to the public	953 (66.5)	281 (19.6)	200 (13.9)	<0.001	<0.001	<0.001	<0.001*	<0.001*	0.037	0.011

* Fisher Exact test.

Table 3 Influence level of pharmaceutical advertisements on consumers.

Questions	Responses						Chi-square test exact <i>p</i> -values					
	E (n)%	G (n) %	A (n) %	P (n) %	VP (n) %	City	Age	Work	Marital status	Education level	Residence location	Gender
Advertisement on television	475(33)	443 (30.8)	295 (20.5)	163 (11.3)	63 (4.4)	<0.001	<0.001	<0.001	<0.001*	<0.001*	0.088*	<0.001*
Advertisement on radio	107(7.5)	337 (23.5)	446 (31.1)	341 (23.7)	205 (14.3)	<0.001	<0.001	0.012	0.005*	0.004*	0.163	<0.001*
Advertisement on health related magazines	343(24)	419 (29.4)	393 (27.5)	188 (13.2)	84 (5.9)	<0.001	0.001	<0.001	0.001*	0.133*	0.003*	<0.001*
Advertisement on newspapers	245(17.2)	449 (31.5)	429 (30.1)	224 (15.7)	79 (5.5)	0.008	0.175	0.002	0.730*	0.280*	0.051*	0.101*
Advertisement on internet	346(24)	478 (33.2)	388 (27)	153 (10.6)	74 (5.1)	<0.001	0.002	<0.001	0.002*	0.058*	0.620*	0.001*
Pamphlets/leaflets	142(9.9)	297 (20.7)	445 (31.1)	377 (26.3)	172 (12.0)	0.036	0.115	<0.001	0.339*	0.031*	0.218	0.077*
Friends and family members	246(17.2)	410 (28.7)	514 (36.0)	198 (13.9)	61 (4.3)	<0.001	<0.001	<0.001	<0.001*	0.039*	0.085*	<0.001*

Note: E: excellent, G: good, A: average, AP: poor, VP: very poor.

* Fisher Exact test.

Table 4 Public perceptions on pharmaceutical advertisements.

Questions	Responses							Chi-square test exact <i>p</i> -values			
	SD (<i>n</i>) %	DA (<i>n</i>) %	N (<i>n</i>) %	A (<i>n</i>) %	SA (<i>n</i>) %	City	Age	Work	Marital status	Education level	Residence location
Promoted drugs are better than non-advertised drugs	89 (6.2)	223 (15.6)	451 (31.6)	486 (34)	180 (12.6)	<0.001	<0.001	<0.001	<0.001*	<0.001*	0.009
Pharmaceutical advertising encourage patients to decide on their choice of drug without the help of a healthcare professional (physician, pharmacist, etc.)	186 (13)	359 (25.1)	388 (27.1)	400 (28.0)	97 (6.8)	<0.001	<0.001	<0.001	<0.001*	<0.001*	0.331
Pharmaceutical advertising provide reliable information regarding a particular medicine	53 (3.7)	188 (13.2)	548 (38.5)	478 (33.6)	157 (11.0)	<0.001	<0.001	<0.001	0.028*	0.005*	0.232*
Pharmaceutical advertising inform patients of potential side effects	93 (6.6)	220 (15.5)	386 (27.2)	509 (35.9)	210 (14.8)	<0.001	<0.001	<0.001	0.019*	<0.001*	0.076
Pharmaceutical promotions better inform patients of their medical problem	51 (3.6)	206 (14.5)	429 (30.1)	541 (38.0)	198 (13.9)	<0.001	0.002	<0.001	<0.001*	0.002*	0.332
The quality of a particular product depends on the frequency of the advertising activities	223 (15.7)	383 (26.9)	308 (21.6)	384 (27)	125 (8.8)	<0.001	<0.001	<0.001	<0.001*	<0.001*	0.137
Pharmaceutical advertising increase drug cost	39 (2.8)	130 (9.2)	479 (33.9)	549 (38.9)	216 (15.3)	<0.001	<0.001	<0.001	<0.001*	<0.001*	0.366*
Advertisements of pharmaceutical drugs help me have better discussions with my doctor about my health	18 (1.3)	104 (7.3)	438 (30.9)	645 (45.5)	214 (15.1)	<0.001	0.005*	<0.001	<0.001*	0.001*	0.714*
I like pharmaceutical advertisements	57 (4)	111 (7.9)	437 (30.9)	587 (41.5)	222 (15.7)	<0.001	<0.001	<0.001	<0.001*	<0.001*	0.261*
Pharmaceutical advertisements help me make better decisions about my health	72 (5.1)	162 (11.4)	472 (33.2)	537 (37.8)	179 (12.6)	<0.001	<0.001	<0.001	<0.001*	<0.001*	0.770*
Pharmaceutical advertisements help make me aware of new drugs	19 (1.4)	80 (5.7)	382 (27.2)	634 (45.2)	288 (20.5)	<0.001*	0.021*	<0.001	0.010*	0.655*	0.544*
I trust the quality of the frequently advertised drugs more than those prescribed by healthcare professionals	313 (22)	522 (36.7)	339 (23.8)	164 (11.5)	86 (6)	<0.001	<0.001	<0.001	0.010*	0.001*	0.776*
Advertisements of pharmaceutical drugs do not give enough information about the possible risks and negative effects of using a drug	70 (4.9)	116 (8.1)	380 (26.6)	494 (34.6)	366 (25.7)	<0.001	<0.001	<0.001	<0.001*	<0.001*	0.046*
Advertisements of pharmaceutical drugs do not give enough information about the possible benefits and positive effects of using the drug	38 (2.7)	155 (10.9)	385 (27.1)	551 (38.8)	290 (20.4)	<0.001	0.006*	<0.001	0.013*	0.371*	0.187*
Pharmaceutical advertisements make the drugs look better than their reality	20 (1.4)	81 (5.7)	552 (39)	483 (34.1)	281 (19.8.)	<0.001*	<0.001*	<0.001	<0.001*	<0.001*	0.135*
I support direct to consumer advertising	40 (2.8)	216 (15.4)	533 (37.9)	501 (35.7)	115 (8.2)	<0.001	0.002	<0.001	0.004*	<0.001*	0.630*
I prefer all drugs to be advertised to the public	46 (3.2)	172 (12.1)	470 (33.2)	520 (36.7)	208 (14.7)	<0.001	<0.001	<0.001	0.002*	<0.001*	0.059*
I prefer only over the counter drugs to be advertised to the public	56 (4.0)	416 (29.4)	287 (20.3)	434 (30.7)	221 (15.6)	<0.001	<0.001	<0.001	<0.001*	<0.001*	0.860*

* Fisher Exact test.

Note: SD: strongly disagree, DA: disagree, N: neutral, A: agree, SA: strongly agree.

Table 5 Type of information that respondents are interested in any medical advertisement.

Section	Responses (n) (%)				Chi-square test exact <i>p</i> -values (<i>p</i> < 0.05)				
	Yes	No	City	Age	Work	Marital status	Education level	Residence location	Gender
Ease of use	149 (10.3)	1297 (89.7)	< 0.001	< 0.001	< 0.001	0.027*	0.115*	0.562	< 0.001*
Side effects	979 (67.7)	467 (32.3)	< 0.001	0.018	< 0.001	0.058*	< 0.001*	0.113	0.088
Drug–drug interactions	347 (24)	1099 (76)	< 0.001	< 0.001	< 0.001	0.003*	< 0.001*	0.021	0.111
Cost	338 (23.4)	1108 (57.4)	0.009	< 0.001	0.887	0.351*	0.892*	0.194	< 0.001
Cases that the advertised medication is used to treat	616 (42.6)	830 (76.6)	0.026	< 0.001	< 0.001	0.260*	0.016*	0.257	< 0.001
Others	62 (4.3)	1383 (95.7)	< 0.001	0.002	< 0.001	0.219	0.002*	0.776*	0.713*

* Fisher Exact test.

Table 6 Influence of pharmaceutical advertisements on drug selection by consumers.

Questions	Responses						Chi-square test exact <i>p</i> -values					
	SD (n) %	DA (n) %	N (n) %	A (n) %	SA (n) %	City	Age	Work	Marital status	Education level	Residence location	Gender
I will ask my doctor to prescribe me an advertised medicine	124 (8.9)	363 (26.1)	495 (35.6)	331 (23.8)	77 (5.5)	< 0.001	< 0.001	< 0.001	< 0.001*	< 0.001*	0.679*	0.340*
I will consult another doctor if he/she does not prescribe me an advertised drug that I requested	202 (14.5)	490 (35.3)	382 (27.5)	256 (18.4)	59 (4.2)	< 0.001	< 0.001	< 0.001	< 0.001*	< 0.001*	< 0.001*	0.081*
I will change my doctor to another if he/she does not prescribe me an advertised drug that I requested	252 (18.2)	587 (42.5)	328 (23.8)	168 (12.2)	46 (3.3)	< 0.001	< 0.001	< 0.001	< 0.001*	< 0.001*	0.013*	0.435*
I prefer to buy advertised drugs despite their price	184 (13.3)	499 (36)	425 (30.7)	231 (16.7)	47 (3.4)	< 0.001	0.001	< 0.001	0.002*	< 0.001*	0.002*	0.094
I will change my current medication to a more frequently advertised medicine	226 (16.3)	564 (40.8)	370 (26.7)	185 (13.4)	39 (2.8)	< 0.001	< 0.001	< 0.001	< 0.001*	< 0.001*	< 0.001*	0.010*
I will buy pharmaceutical products on sale regardless their expiration date	398 (28.7)	490 (35.4)	294 (21.2)	158 (11.4)	45 (3.2)	< 0.001	< 0.001	< 0.001	< 0.001*	< 0.001*	< 0.001*	0.451*
I would buy an advertised drug without referring to my doctor	373 (26.9)	678 (48.9)	207 (14.9)	89 (6.4)	39 (2.8)	< 0.001	< 0.001	< 0.001	0.004*	< 0.001*	0.055*	< 0.001*
I would recommend advertised drugs to my friends and family members	186 (13.4)	280 (20.2)	483 (34.8)	353 (25.5)	84 (6.1)	< 0.001	< 0.001	< 0.001	< 0.001*	< 0.001*	0.091*	0.005*

* Fisher Exact test.

Note: SD: strongly disagree, DA: disagree, N: neutral, A: agree, SA: strongly agree.

they will consult another doctor or change their doctor if he/she does not prescribe them an advertised drug. Furthermore, more than 57% of respondents indicated that they will change their current medications to a more frequently advertised drug and more than three quarters of respondents mentioned that they will buy a more frequently advertised drug regardless of its expiration date. Most demographic variables showed significant variations ($p < 0.05$). A higher proportion of Jeddah residents, those with more than 40 years of age, with a health related family member, with secondary and tertiary educational levels disagreed on the statements in Table 6.

4. Discussion

To the best of our knowledge, this is the first report to explore consumers' perceptions and behaviors toward drug advertising in KSA. The investigated sample composed of 1445 respondents; most of them were Saudi nationals (~98%), males (97%) and young (20–29 years old) (70%).

Majority of respondents were aware of drug types to be advertised. Participants mentioned that drug advertisements should be approved by health authorities; however, they were divided with regard to direct promotion of OTC products. The effect of different media was investigated in this study. Results indicated that TV and Internet showed the highest effect on consumers. These findings are consistent with the findings of Liu and Gupta (2011) and Andrew et al. (2004). The researchers found that drug promotions on TV had strong impacts on underserved parts of the population. On the other hand, Bell et al. found awareness to be higher among the participants, 329 adults living in California, who were exposed extensively to printed media (Bell et al., 2010). Another study by Huh and colleagues on the trust of on-line advertisements on prescription drugs, found that majority of respondents do not trust the information provided on-line on prescription drugs (Huh et al., 2005).

Investigation of attitudes and behaviors of consumers toward pharmaceutical advertisements was conducted and almost half of the sample preferred promoted medication over non-promoted. Most of the respondents pointed out that the quality of frequently advertised drugs is not more than those prescribed by healthcare providers. Results showed that majority of the participants have positive attitudes toward drug advertisements concerning their role in education and spreading awareness. Suh et al. surveyed 350 patients in South Korea and found that the respondents had positive attitudes toward DTCA. Patients mentioned that drug advertisements are essential and they had intention to use the inclusion information (Suh et al., 2011). Similar results were reported by Harrington et al. (2012). The researchers assessed attitudes of 243 pharmacy students toward DTCA, and showed that the participants agreed with the statement that DTCA assists patients to take more active role in treatment options (Harrington et al. 2012). In addition, Grenard et al. found that drug advertisements increased the awareness of antidepressants among patients with depression (Grenard et al., 2011). Andrew et al. found different results in India. Most of the surveyed participants were unaware about the side-effects of the OTC medications despite the findings that drug advertisements had a significant impact on the investigated people of all regions and classes (Andrew et al., 2004).

A random telephone survey of 329 adults living in California showed that awareness was affected by many factors, including the use of prescription drug, exposure to the media, positive attitudes toward direct-to-consumer promotion, poorer health, and insurance status (Kaphingst et al., 2004).

Pharmaceutical advertisements harm the doctor–patient relationship in many aspects. Pharmaceutical advertisements do not always inform patients about the possible risks of the advertised products equally as they inform about their benefits (Cox and Cox, 2010; Shish and Holt, 1999) which might mislead the patient. For example, around one-third of the investigated sample in this study indicated that they would request a promoted medication from their doctor. This finding was supported by those of Bell et al. (2010). Their study showed that antidepressant promotions resulted in requests for a new drug or a change in medication. Another support for the negative effect of drug advertisements was found by Grenard et al. (2011). Their study indicated that seniors' request for a prescription as a result of drug promotions may complicate the relationship between the doctors and their patients. Moreover, majority of the respondents mentioned that they would consult another doctor or even change the doctor is conditional with his/her refusal to prescribe a promoted drug. Bell et al. found similar results as one third of the sample initiated a dialog about a promoted drug and 20% had requested a promoted medication (Bell et al., 2010). Furthermore, a study that evaluated the impact of TV advertisement of medication for seasonal allergy of asthma found that about 90% of respondents have seen the advertisement and 12.4% of them created a communication with their doctors asking them about the advertised drug (Khanfar et al., 2008). In contrast to our findings, Liu and Gupta showed that DTCA had a positive and long-range impact on the number of visits to doctors (Liu and Gupta, 2011). Another study found that patients who requested specific drug brands were only 3.5%. In fact, physicians indicated that patients request had a positive influence on the doctor–patient relationship (Wilkes et al., 2000).

It is worth not to ignore the confusing effect of some DTCA, a study conducted by Hyla et al. to measure the impact of DTCA on patients' behaviors found that more than one quarter of their respondents were confused from the advertisements. In addition 17.8% of them stopped taking their medications due to considerable side effects mentioned in the advertisement (Hyla et al., 2009).

The present study has limitations. Although the sample size is large (1445), it cannot be considered representative of the general population in the Kingdom of Saudi Arabia. For example, 97% of the investigated sample are males while the remaining (3%) are females. The low percentage of female respondents in this study is due to the fact that all data collectors are males in which the Saudi culture does not allow direct mixing and contact of males with females. Thus, we managed only to collect data from a very low percentage of female respondents. Despite the previously mentioned drawbacks, findings of this study are worthy of more survey with a larger and more heterogeneous population.

5. Conclusion

Findings of this study highlighted general public knowledge, perceptions and practice toward pharmaceutical

advertisements. A great percentage of participants were aware of authorized drugs to be advertised. Even though the frequency of pharmaceutical advertisements was not perceived to affect the quality of the advertised medication, rather, majority of respondents preferred to buy a more frequently advertised medicine. Policy makers have to be concerned about the impact of pharmaceutical advertisements on the public. Hence, enforcement of the regulations and laws regarding protecting the public from the profit oriented organizations is imperative.

Conflict of interest

There is no conflict of interest.

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