



PRACTICE REPORT

# The utilization of Arabic online drug information among adults in Saudi Arabia

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## KEYWORDS

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**Abstract** In Saudi Arabia, the utilization of the world wide web has become increasingly popular. However, the exact figure of such use is unknown. This study aimed to determine the percentage of, and experience with, online Arabic drug information by Arabic-speaking adults in Saudi Arabia. A web based questionnaire was used. The questionnaire language was Arabic. Public were invited to participate in the survey through e-mails, Twitter, WhatsApp and Facebook in March 2012. The survey included 17 items examining the types of accessed Arabic drug information, the respondent's demographics, their ability to easily find and understand Arabic drug-related information, and their trustfulness and dependency on such information websites. Of the 422 Arabic speaking adults who answered the questionnaire, 88% stated that they used Arabic websites to answer drug-related questions. Of the respondents, 50% had a bachelor's degree, 44% were young adults, over half were female (60%), and 72% of them have a chronic disease. The ease of retrieving online information was the most common reason (69%) for consulting such websites. Google as a search engine was the most frequently (86%) accessible website. Although respondents reported different drug-related topics in their online searching, the search for adverse effects was the most common (68%). Respondents claimed that they could easily find (65%) and understand (49%) the drug-related information. Although a good number of respondents qualified this type of information as good, double-checking of information on other websites was highly recommended. Trustfulness was one of the

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important parameters to measure and 205 respondents (55%) claimed that they only trusted half of the information cited. Moreover, around 48% of respondents considered that finding the same information on more than one website increased its trustfulness. Surprisingly, 54% of respondents did not depend on Arabic information websites when making decisions on drug use. There are a high proportion of Arabic speaking people in Saudi Arabia using and consulting Arabic drug information websites. This information is easily found and understood. However, the quality and trustfulness of such websites are not high enough to depend on them. A qualified Arabic drug information website is important to meet this need.

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## 1. Introduction

The use of the internet to look for drug-related information has become a common practice worldwide. Around 61% of American adults used the internet as a health information source in 2009 (Fox and Jones, 2009). The exact figure in Saudi Arabia is unknown. A study done in 2006 showed that only 13% of Saudi cancer patients accessed the internet to look for drug and disease-related information (Ibrahim and Boulos, 2006). However, limited English language proficiency was considered one of the most common barriers to accessing foreign websites (Ibrahim and Boulos, 2006). Accessing Arabic drug information websites among Arabs is an important issue that needs to be investigated.

The internet has become accessible and available to most people in Saudi Arabia. The population of Saudi Arabia in 2010, according to the latest statistics of the Saudi central department of statistics and information, is 27,136,977 where 11.8 (43%) million of them are internet users (CDSI, 2012). This indicates quite large proportions of the Saudi population are internet users.

Since online health information has a major impact on healthcare, identification of this use by Arabic-speaking people, especially those who cannot understand the English language, has become a priority. Studies have shown that good adherence to drug treatment is more obvious when patients receive quality drug information (Ulfvarson et al., 2007). There is an extensive amount of online Arabic drug information, but the reliability and quality of such information are questionable.

A need to explore the issue of online Arabic drug-related information utilization in Saudi Arabia is important. This study aimed to determine the percentage of, and experience with, Arabic drug information that is retrieved online by Arabic-speaking adults in Saudi Arabia.

## 2. Method

A web based questionnaire was used. The questionnaire language was Arabic. Public were invited to participate in the survey through e-mails, Twitter, WhatsApp and Facebook in March 2012.

### 2.1. Questionnaire development

The questionnaire contained 17 items and required approximately 5–10 min to complete. The questionnaire was designed based on previous surveys (Ho et al., 2009; Peterson and Fretz, 2003), especially questions regarding reliability of online information.

The questionnaire collected information on respondent's demographics such as age, gender, and education level. Respondents were asked if they have any chronic medical condition and/or their relatives, and the type of chronic disease. Then respondents were asked regarding the use of the internet to look for Arabic drug information (Do you use the internet to search for drug information in Arabic language?). Those who responded with no, were asked to state the reasons for not using the internet and not to complete the questionnaire. Those who responded with yes were asked about reasons for searching for drug information on the internet. Subsequently, five choices of Arabic online drug information sources were presented to the respondent so they could choose one or more than one of them to show the most commonly accessed sources. An empty space was provided also to add any other website. In addition, respondents were asked about the type of drug information they searched for (e.g. proper dose, side effects, safe use during pregnancy/breastfeeding, whether drug can be taken with other medication/herbs/food). Then respondents were asked to rate the ease of finding and understanding online information. In addition, respondents were asked questions regarding their perception of the quality of drug information obtained from searched websites and their trust in online medical information. Respondents were asked about the influence of online drug information on therapeutic decisions. Extra space was provided for respondents to allow for further information or comments.

Prior distribution, the questionnaire was piloted on a sample of 30 participants to test any difficulties in understanding. Few minor changes were made accordingly.

### 2.2. Statistical method

Variables were expressed as a frequency and compared when applicable using chi-square test and *p*-value less than .05 was considered to be statistically significant.

## 3. Results

### 3.1. Demographics of respondents

Four hundred twenty two respondents completed the questionnaire. Three hundred seventy three respondents (88%) claimed that they used the internet (internet users) as a source of drug information. Of those 223 (60%) were females, (44%) were young (18–25 years), with education level equal to or higher than secondary school (84%) (Table 1). A high percentage of respondents (72%) reported that they and/or their relatives had chronic conditions, most commonly diabetes (68%). Forty

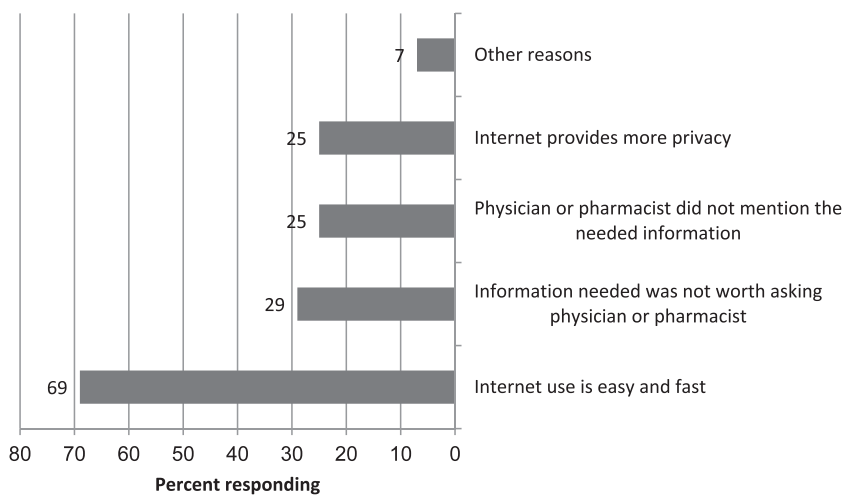
**Table 1** Respondents Demographic characteristics (n = 422).

	Internet users (n = 373) N (%)	Non-internet users (n = 49) N (%)
<i>Gender</i>		
Female	223 (60)	17 (35)*
<i>Age (years)</i>		
18–25	163 (44)	21 (43)
26–35	108 (29)	16 (33)
36–45	75 (20)	8 (16)
46–55	23 (6)	3 (6)
56 and more	4 (1)	1 (2)
<i>Education level</i>		
Elementary school	1 (0.3)	0 (0)
Middle school	8 (2)	2 (4)
High school	127 (34)	22 (45)
Bachelor degree	185 (50)	19 (39)
Master degree	38 (10)	6 (12)
PhD	10 (2.6)	0 (0)
Missing	4 (1.1)	0 (0)
<i>Chronic condition</i>		
Yes	268 (72)	34 (69)
<i>Type of chronic condition</i>		
Diabetes	253 (68)	25 (51)*
Hypertension	179 (48)	16 (33)*
High cholesterol	134 (36)	8 (16)*
Heart disease	63 (17)	6 (12)
Respiratory disease	115 (31)	11 (22)
Other chronic disease	37 (10)	3 (6)

\* Indicates significant difference,  $p < .05$ .

nine respondents stated they did not use the internet as an Arabic drug information source. Sixty five percent of them were male, 43% were young adults and the majority of them (84%) had attained either secondary school qualifications or a bachelor's degree. They also had, and/or their relatives had, a chronic disease (69%), where diabetes is also the majority (51%) among all chronic diseases reported.

There were no significant differences in demographic characteristics of both internet users and non-internet users except in gender ( $\chi^2(1) = 11.11, p < .05$ ), where majority of internet users tend to be females as shown in Table 1. However, diabetes, hypertension, and high cholesterol were significantly more reported by internet users ( $\chi^2(1) = 5.44, p < .05$ ), ( $\chi^2(1) = 4.1, p < .05$ ), and ( $\chi^2(1) = 7.45, p < .05$ ) respectively.



**Figure 1** Analysis of reasons for using the world wide web as a source of Arabic drug information. \*Percent may add up to more than 100% because respondents were asked to choose more than one answer.

### 3.2. Use of internet

When asked about the reasons for using the internet to search for drug information, 257 respondents (69%) indicated that the internet use is easy and fast. One hundred and eight (29%) respondents reported that the information needed was "not worth asking a physician or pharmacist about". Other reasons are presented in Fig. 1.

Of those who reported not using the internet, the most common reason for that was "not trusting Arabic drug information source" ( $n = 19$ , 39%) and "prefer physician and pharmacist consultation" ( $n = 13$ , 27%). Other reasons were clear drug treatment ( $n = 8$ , 16%), or "never thought about it" ( $n = 9$ , 18%).

### 3.3. Sources of online Arabic drug information

321 respondents (86%) used search engines such as Google to find required drug information. Other respondents reported using specific Arabic drug information websites such as Dawaa (<http://www.dawaa.net>) ( $n = 17$ , 4.6%), Pharmarabia (<http://www.pharmarabia.com>) ( $n = 8$ , 2%), and Almalak (<http://www.elmalakrx.com/arabic>) ( $n = 4$ , 1%). Discussion Forums were reported by 27 (7%) of respondents as a source of Arabic drug information. However 10 respondents (3%) reported other Arabic website such as Sahha (<http://www.sahha.net>) and Tabeebe (<http://www.tabeebe.com/vb/>).

### 3.4. Type of information sought

As shown in Table 2, respondents used the internet to search for a variety of drug information. Two hundred fifty three respondents (68%) searched for adverse effects, 123 (33%) for proper drug use, 104 for drug–drug interactions (28%), and 82 for safety in pregnancy (22%).

### 3.5. Experience with the use of the internet as drug information source

Getting information from Arabic online drug information can be sometimes quite easy as stated by 242 (65%) of respondents and 123 (33%) found the information they needed easily at all times. Only eight (2%) faced difficulties finding the informa-

tion they needed. Among those who found their information easily, 183 (49%) confirmed that they understood the information completely without any problems. Nevertheless, 153 (41%) could not understand some of the medical terminologies used. A low percentage ( $n = 49$ , 13%) reported problems when looking for the information they needed online and could not understand all ( $n = 26$ , 7%), or most ( $n = 23$ , 6%), of the information they found.

### 3.6. Respondents Perception of Quality and Reliability of online Arabic drug information

Respondents rated the quality of various websites as sources of drug information as 'good' generally. Two hundred and five of respondents (55%) using the internet for drug information rated quality as "good but need to check other websites". While 145 (39%) rated the quality as "fair but need to check other websites and consult a physician or a pharmacist". However, while 10% ( $n = 37$ ) of respondents rated the quality of websites as "excellent", 2.5% of respondents ( $n = 9$ ) reported the quality as "unacceptable and most of the available drug information is incorrect".

More than half of respondents ( $n = 205$ , 55%) believe "half of the information". On the other hand 78 respondents (21%) do not trust "all of the information", while 14% of respondents ( $n = 53$ ) claimed they trust "all of the information". Thirty seven (10%) respondents reported that they are "unsure whether the available information can be trusted or not".

When the respondents were asked to identify factors affecting the reliability of Arabic websites, the existence of the same information on more than one website was the most commonly selected factor ( $n = 179$ , 48%). Another important factor was the similarity of the online information to that provided by a physician or a pharmacist ( $n = 168$ , 45%). Recommendation of a website by healthcare professionals was chosen by 27% of respondents ( $n = 100$ ). Approximately 13% of respondents ( $n = 48$ ) were unsure whether online information could be reliable or not.

### 3.7. Use of internet and decision making

Two hundred and one respondents (54%) claimed that their therapeutic decisions did not depend on internet drug information. Twenty eight percent of respondents ( $n = 104$ ) were "unsure" if their therapeutic decisions were influenced by internet drug information. Only 19% ( $n = 71$ ) claimed that their therapeutic decisions are influenced by internet information.

The last question that asks the respondents to add any extra information was helpful in understanding other needs of the Arab population. Thirty nine respondents (11%) provided free text responses. The majority ( $n = 33$ , 85%) desired a qualified, reliable Arabic drug information websites that help Arabs to find trustworthy medical information.

## 4. Discussion

The important finding of this study is that 88% of respondents seek Arabic drug information on the internet. A study that involved adult Saudi cancer patients found that only 13% of them used the internet as a drug information source (Ibrahim

**Table 2** Most Common Drug Information that Respondent Searched for.

Drug Information	$n$ (%) <sup>*</sup>
Side effects	253 (68)
How to use the drug properly	123 (33)
Drug–drug interaction	104 (28)
Effects of the drug on a fetus	82 (22)
Number of doses	71 (19)
Drug–food interaction	67 (18)
Drug safety in children	63 (17)
Drug–herb interaction	60 (16)
Other	48 (13)
Drug safety in breastfeeding women	45 (12)

<sup>\*</sup> Percent may add up to more than 100% because respondents were allowed to choose more than one answer.

and Boulos, 2006). The same finding was reported in a non-Saudi study (Ho et al., 2009). One explanation for the high percentage of internet users, is our young and well educated sample. Young adults used the internet to search more than older adults (Ho et al., 2009). This finding encourage targeting such age group in web based education programs and health information that will improve health knowledge.

Although females reported a higher percentage of using the web as a source of Arabic drug information in this survey, the literature indicated that gender is not associated with a history of using the internet (Ho et al., 2009). However, high percentage of male gender in non-internet user may warrant further investigation. One explanation might be that, in Saudi culture the females usually take the responsibility for caring for their family members in case of sickness, and thus need to look for the information more than males. Internet users being significantly more diabetic and hypertensive may explain the need of chronic patient for more information on their disease and its management.

In concordance with previous research (Ho et al., 2009) ease and convenience are the major reasons to use the internet as a source for medical information. This is expected especially with an easy to use search engine such as Google. When respondents report that the information they are looking for is not worth asking a physician or pharmacist this means that we can claim that both physicians and pharmacists may not have provided the needed information to the patient. Although we did not explore what respondents mean by not worth asking physician or pharmacist, we expect respondents mean minor ailments such as fever or diarrhea.

As with previous reports (Diaz et al., 2002; Ho et al., 2009) the majority of the respondents were looking for information on the side effects of drugs. This indicates a general fear of drug side effects, which warrants public education about such issue. Around half of the respondents claimed that they understood all of the information and the rest of the respondents said that they only had a problem with the medical terminology. This finding, although not expected but reported elsewhere (Ho et al., 2009), needs some attention. Self-reporting of understanding might not reflect the actual level of understanding, which may necessitate using more objective method to assess understanding in future research.

The good quality of online information reported by the majority of respondents has also been reported before (Diaz et al., 2002; Ho et al., 2009). However, this result should be interpreted with caution since the ability of public to evaluate quality of online drug information might not be adequate. Subjects with a low level of education and health information orientation have been reported to have greater trust in online information (Dutta-Bergman, 2003).

In spite that a low percentage of respondents stated that their final decision regarding drug treatment issues is not affected by such online information, a need to improve the quality and reliability of Arabic drug information websites is of paramount importance. This is because a good proportion of respondents use the internet and many of them trust and believe in online information.

During data collection of this survey, fortunately the King Saud bin Abdulaziz University for Health Sciences (KSAU-

HS) and the Saudi Association for Health Informatics (SAHE) launched the Arabic health encyclopedia. This Arabic encyclopedia will be called as the King Abdullah bin Abdulaziz Arabic Health Encyclopedia (KAAHE) and will be supported by two organizations, the World Health Organization (WHO) and Health On the Net (HON) (Altuwajri, 2011). KAAHE will provide reliable Arabic health-related information that will include information about drugs, diseases, and much more. KAAHE will provide this service to more than 300 million Arab citizens around the world. It is the responsibility of all health practitioners to inform their patients about this encyclopedia so that they can access high quality drug-related information.

This study has many limitations. One of them is the small sample size. Respondents are from one city in Saudi Arabia, limiting generalizability to the entire country. Also our sample was not selected randomly which raises the possibility of selection bias. In addition, our survey was Web-based and distributed through email and twitter so our respondents are more likely to be frequent internet users. Thus, our findings cannot be generalized to those who use the internet less frequently. Furthermore, the use of self-completed questionnaire means that the results depend on the respondents' interpretation of the questionnaire items; also respondents' actual internet use cannot be verified. Despite these limitations, this study represents the first attempt to evaluate internet use as a source of health information in Saudi Arabia.

Future researches need to include large sample size that covers the entire country of Saudi Arabia. Further research that assesses the actual understanding of online Arabic information is also useful.

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