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Research Article

Knowledge, Attitudes and Practices on Medication Use and Safety among Saudi People: a Public –based Versus an Internet –based Survey in Taif; Kingdom of Saudi Arabia

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Abstract: Suboptimal knowledge on medication use and safety and negative attitudes has negative impact on drug use. The major objective of this study was to measure the public knowledge and to identify their attitudes and practices on medication use and safety. Two cross –sectional surveys (Public-based and internet-based) were conducted during June to October 2015. Adult (≥ 18 years old) Saudi residing in Taif City; KSA were included. Convenience method of sampling was adopted and data was collected by mean of a structured questionnaire. Data was processed by SPSS. A total of 788 (386 and 402 in the public-based and the internet-based study, respectively) was recruited. Respondents recruited electronically with satisfactory knowledge on medication use were 302 (75.1%), compared to 234 (60.6%) included manually, (P= <0.001). Predictor of satisfactory knowledge among public survey interviewees was higher education [OR= 1.9; 95% CI (1.2-2.9); P = 0.003]. However, age (> 30 years) and higher educational level were significantly associated with satisfactory knowledge among electronically responded participants [OR= 0.6; 95% CI (0.4-1.0); *P* = 0.032] and [OR= 1.9; 95% CI (1.1-3.2); P = 0.015], respectively. Misconceptions in knowledge, attitudes and practices on medication use and safety were identified. Public education that brings about positive changes is imperative.
Keywords: Medication, Knowledge, attitude, practice, Safety

INTRODUCTION

Rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, and the lowest cost to them and their community [1]. The consequences of irrational drug use are enormous in term of both adverse clinical outcomes and wasting of financial resources.

Studies around the world documented irrational use among the public. Despite the fact that several benefits have been linked to self-medication, it is considered as one of the malpractices related to medication use and safety [2]. Using multiple medications "polypharmacy" and drug-drug interactions, medications abuse or dependence, misdiagnosis and inappropriate choice of treatment are the most important dangers related to self-medication practice [3]. The high prevalence of self –medication with antibiotics was reported in Saudi [4] and other countries [5, 6].

A systematic review found high prevalence of antibiotic irrational use both in terms of non-compliance with treatment and reuse of leftover antibiotics [7]. Adverse drug reactions of analgesic are often dose-related and time dependent [8]. However, high percent of population use prescription and non-prescription analgesics [9].

Poor knowledge about common side effects associated with drug therapy was documented in the literature [10]. Similarly, knowledge about drug interactions types and its management and prevention is suboptimal [11].

Assessment of the public knowledge and identifying their attitudes and practices on medication use and safety is important to identify gaps in these domains. The gaps can be the focus of future educational programs to raise the public awareness in the identified misconceptions. Therefore, this study was conducted mainly to measure the public knowledge, and to identify their attitudes and practices on medication use and safety and specifically to:-

- Identify the difference in demographic characteristics between participants interviewed manually and electronically.
- Measure the difference in their level of knowledge, attitudes and practices related to medication use and safety.

- Identify predictors of the three studied domains (knowledge, attitudes and practices) among both studied samples.

METHODS

Study design and setting

Two cross –sectional surveys (Public-based and internet-based) were conducted during June – October 2015 in Taif City, Kingdom of Saudi Arabia.

Inclusion and Exclusion criteria

In both surveys adult (≥ 18 years old) Saudi people residing in the city were included. The exclusion criteria were: refusal to participate and people who were mentally incapable to communicate. The objectives of the study were stated clearly for the participants before commencement of the interview process. Likewise, these objectives were stated in the electronic version of the questionnaire.

Sample and sampling technique

Based on the last census conducted in the year 2010 [15], the total number of adults in the study area was estimated to be 1,200,000. The sample size based on that census was calculated to be 385. Sample calculation was conducted at a 95% confidence level with a margin of error 5%. In both studies convenience method of sampling was adopted.

Data collection

Data was collected by mean of a structure questionnaire. First the questionnaire was distributed electronically through the social media. After the determined sample size was achieved by this method, data collectors started to collect data manually. During the process of manual data collection every one admitted the participation in the electronic survey was immediately excluded from the public-based study. Face-to-face interview method was used to collect data from public –based participants by semi-final year Pharm-D students. The data was collected in public places in the city (Malls, supermarkets, parks, schools, and restaurants). The average time to conduct the interview was estimated to be 10 minutes. The questionnaire items were adopted from a previous study with slight modifications [12]. The items were translated into Arabic Language using forward- backward translation method. The questionnaire was tested with a group of 10 people to ensure applicability and estimate the time frame needed to complete it. Minor suggestions were observed and adopted in the final version. The questionnaire was composed of four sections to collect data on:-

- Participant's demographic characteristics: gender, age in year, educational level, family level of monthly income, presence of chronic illness and current use of chronic drugs.
- Assessment of knowledge on medication use and safety through ten general questions on medication use and safety. Responses to these questions were recorded as "Yes" or "No", with yes, given score =1 point and no = 0 point, with a total ranging between 0-10 points. Respondents in both surveys were considered to have satisfactory knowledge on medication use and safety if their scores were six points or more and with non-satisfactory knowledge if their scores were below this cutoff point.
- Attitudes on medication use and safety through five questions with Likert's scale responses (strongly agree, agree, neutral, disagree and strongly disagree) to each question.
- Practices on medication use and safety, which was investigated through five questions with Likert's scale responses (Always, usually, sometimes, seldom and never).

Data analysis

Data was processed using the software SPPS (21.0 SPSS Inc., Chicago III, USA). Descriptive statistics were used to describe all variables. Associations between different proportions were tested by Chi-square test. Logistic regression analysis was performed to determine the most significant demographic variables (independent) associated with total knowledge on medication use and safety (dependent).Crude logistic regression analysis was performed as initial step of qualifying covariates to be included in multivariate logistic regression analysis. P value< 0.05 was considered statistically significant.

Ethical approval

Ethical approval for the conduction of the research was obtained from the Pharmacy Practice Research Unit (PPRU), College of Pharmacy, Taif University, Saudi Arabia.

RESULTS

Demographic characteristics

A total of 788 (386 and 402 in the public-based and the internet-based study respectively) was recruited. Male to female ratios were 2.9 to 1.4 in the public versus the internet –based survey respectively. Highly educated people were more among electronically recruited participants. Table (1) showed participants' demographic characteristics.

Table 1: Background characteristics

Background characteristic	Frequency (%)		P value
	Public	Electronic	
Gender			
Male	287 (74.9)	236 (58.7)	< 0.001
Female	099 (25.6)	166 (41.3)	
Age in year			
≤30	250 (64.8)	230 (57.2)	0.032
>30	136 (35.2)	172 (42.8)	
Educational level			
University	179 (46.4)	305 (74.9)	< 0.001
Below University	207 (53.6)	097 (24.1)	
Monthly income in SR			
< 5000	234 (60.6)	223 (55.5)	0.030
> 5000	152 (39.4)	179 (44.1)	
Suffering from chronic disease/s			
Yes	046 (11.9)	071 (17.7)	0.023
No	340 (88.1)	331 (82.3)	
On chronic medication/s			
Yes	032 (8.3)	069 (17.2)	< 0.001
No	354 (91.7)	333 (82.8)	
Total	386 (100)	402 (100)	

Knowledge on medication use and safety

Nearly half (49%) of the participants recruited manually believed that antibiotics can be taken without prescription and 37.3% hold the beliefs that patients can stop the antibiotics if symptoms of infection disappear compared to 41.8% and 60% of the participants in the electronic survey, respectively. Correct responses on items designed to assess knowledge on medication use and safety in both surveys were presented in table (2).

Table 2: Percentages of correct responses on knowledge about medication use and safety

Item	Percentage of correct response		P value
	Public (n=386)	Electronic (n= 402)	
Antibiotics can be taken without prescription	49.0	41.8	0.043
Traditional medicines are free from side effects	61.9	71.6	0.004
Overdose of Paracetamol or taking it for long time can cause liver damage	74.6	78.9	0.158
Nausea, Vomiting and Diarrhea may result from side effect of medicine	75.6	87.3	0.283
Some Cough syrups, Antacids and Vitamin C are non-prescription medicine	66.1	79.4	<0.001
Vitamins like normal food over consumption will not cause negative effects to human body	50.0	62.2	<0.001
Drugs can be taken anytime the person feels similar symptoms to previous disease condition	49.5	55.0	0.123
Storing syrup in a refrigerator could preserve it longer	64.5	56.5	0.021
Taking medicine with food, drinks, tea can interfere with the effect of medicine	70.2	77.6	0.018
Patient can stop the antibiotics if the symptoms disappear	37.3	60.0	<0.001

Total knowledge and its predictors

Nearly three-quarter of the respondents recruited electronically had satisfactory knowledge on medication compared to 60.6% included manually. The only predictor of the level of knowledge among public survey interviewees was higher education [OR= 1.9; 95% CI (1.2-2.9); P = 0.003]. However, age (> 30 years) and higher education were significantly associated with satisfactory knowledge among electronically responded participants [OR= 0.6; 95% CI (0.4-1.0); P = 0.032] and [OR= 1.9; 95% CI (1.1-3.2); P = 0.015], respectively.

Table 3: Attitudes on medication use and safety

Question	Public (n=386)			Electronic (n=402)		
	% SA/A	% UC	% D/SD	% SA/A	% UC	% D/SD
Trustworthiness of a pharmacist as a consultant of drug information	70.0	22.0	8.0	59.7	23.1	17.1
It is important to consult pharmacist before taking any drug	83.9	8.5	7.5	78.8	12.2	8.9
It is important for patient to know common side effects of medicines	91.7	6.0	2.3	94.5	3.5	2.0
Self-medication is better compared to prescription from your doctor	14.2	10.9	74.9	10.2	11.7	78.1
Medication use and safety information are very important to the patient	92.5	4.1	3.4	96.0	3.2	0.8

SA= Strongly agree, A= Agree, UN= Uncertain, D= Disagree, SD= Strongly disagree

Attitudes on medication use and safety

Seventy percent of the respondents included in the public survey strongly agree/ agree with the statement " The pharmacist is trusted as a consultant of drug information" and 74.9% strongly disagree/ disagree that self-medication is better than prescription issued by the doctor, compared to 59.7% and 78.1% participated in the electronic study, respectively.

Table (3) showed participants' attitudes on medication use and safety.

Practices on medication use and safety

Nearly forty percent of the participants recruited manually never combined traditional herbs with modern medicines and slightly above thirty of them never asked the community pharmacist for prescription medicines without prescription, compared to 36.8% and 36% of those responded to the electronic questionnaire, respectively. Table (4) and table (5) showed percentages of participants' practices on medication use and safety in the public and internet –based surveys.

Table 4: Practices on medication use and safety (public –based Survey, n=386)

Question	Always	Usually	Sometimes	Seldom	Never
How frequent do you take traditional medicine?	7.3	12.4	39.4	20.2	20.7
Will you ask your community pharmacist for prescription medicine without prescription?	5.2	13.2	32.1	18.7	30.8
How frequent do you take self-medication?	10.1	18.1	37.3	14.8	19.7
Will you combine traditional herbs while you are taking western medicine?	5.4	13.2	22.0	20.2	38.9
Will you try medicine according to your friends' suggestions?	7.3	11.9	28.2	23.1	29.5
When your symptoms relieved, will you discontinue your prescription medicines by yourself?	27.5	23.3	26.2	9.3	13.7
How often do you go to hospital to see doctor when you are sick?	25.6	25.9	29.3	15.0	4.1
When you visit your physician, will you bring all the medications you are currently taking	19.9	14.2	21.0	22.0	22.8
Will you check with your pharmacist before taking medicines that you have never used before?	20.7	16.6	24.6	19.9	18.1
Will you consult your pharmacist when you received special or uncommon dosage form of medicine (e.g. nasal spray or suppository)	35.0	22.8	19.7	10.4	12.2

Table 5: Practices on medication use and safety (Internet –based survey, n= 402)

Question	Always	Usually	Sometimes	Seldom	Never
How frequent do you take traditional medicine?	6.2	13.7	36.6	28.9	14.7
Will you ask your community pharmacist for prescription medicine without prescription?	4.2	10.2	25.6	23.4	36.0
How frequent do you take self-medication?	7.7	17.4	45.8	17.4	11.7
Will you combine traditional herbs while you are taking western medicine?	4.0	9.5	28.4	21.4	36.8
Will you try medicine according to your friends' suggestions?	4.2	10.2	37.3	22.6	25.6
When your symptoms relieved, will you discontinue your prescription medicines by yourself?	29.1	21.6	26.9	11.4	10.9
How often do you go to hospital to see doctor when you are sick?	15.9	24.4	39.6	17.9	2.2
When you visit your physician, will you bring all the medications you are currently taking	13.2	15.7	24.9	20.6	25.6
Will you check with your pharmacist before taking medicines that you have never used before?	15.2	15.4	20.1	19.9	29.4
Will you consult your pharmacist when you received special or uncommon dosage form of medicine (e.g. nasal spray or suppository)	38.3	20.6	21.6	7.5	11.9

DISCUSSION

To the best of our knowledge this study was the first of its type to investigate the public knowledge, attitudes and practices (KAP) on medication use and safety in Saudi Arabia. The rationale behind the recruitment of the participants by the two selected methods was to identify any demographic difference and the influence of this difference on participants KAP on medication use and safety. The electronically distributed questionnaire gave a great opportunity to the females to take part in the study. This finding was expected as it is very difficult to recruit them manually due to cultural norms in the country. Higher education was predominating among electronically recruited individuals. People with higher level of education normally prefer communication through social media and they constitute the majority of those who access such communication channels.

One of the major aims of this study was to measure the public knowledge on medication use and safety. The study revealed gaps in knowledge with regard to both medication use and safety. Two serious deficiencies in knowledge items that belong to the use of antibiotics were identified. Participants in the two groups believed that these agents can be used as over-the – counter drugs and on the possibility of stopping the course of treatment with these agents when symptoms disappear. These misconceptions will contribute to the emergence of antibiotic resistance and increase the burden of future infections in term of both patient outcome and waste of financial resources. Liberal sale and availability of these drugs through community pharmacy outlets beside participant's unawareness of the consequences of these practices maybe responsible factors that lead to these misconceptions. The high percentage of self-medication with antibiotics was documented in another study conducted in KSA [13]. In the above mentioned study [4], at the same study area, above one third of the interviewees were classified as knowledgeable with basic information about antibiotics and the consequences of its irrational use.

The use of traditional medicines is an important component of Arab countries' folklore. A considerable percentage of participants in both surveys thought that traditional medicines are free from side effects. In another Gulf country, nearly a quarter of the studied population admitted that they did not inform the healthcare providers about the medicines they use including traditional medicines [14]. Serious interactions can occur as a result of mixing both modern and traditional medicines [15].

Researchers in India [16] found that the use of multivitamins was highly prevalent among the public and most of them were unaware with their possible harm or interactions. In accordance with the latter finding, a considerable number of participants in both recent surveys had the belief that these drugs like food and unaware with the health hazards which may result as a consequence of their over consumptions. Advertisements and availability of these drugs as over-the-counter medicines are the major contributory factors that lead to these misconceptions.

Repetition of the same drug/s for the same symptoms or previous disease was identified as another important misconception among both studied groups. The consequence of this practice is that, the use of the previously used drug may mask the symptoms of the current illness and endanger the life of the patient. The availability of medicines free charge from governmental health facilities at all levels in the country may be a factor that leads to this malpractice. People should be educated on how to properly handle the leftover drugs in their homes. In a study conducted in Malaysia 40% of the respondents reported that they will advise to take their unused medicines to people who apparently experience similar illness [17].

A better satisfactory knowledge of drug use and safety was identified among participants recruited electronically compared to those included manually. A most probable explanation of this difference was the higher level of education observed among the former group. Of no doubt, highly educated people have better chances to come across considerable information about medication use and safety. In addition, highly educated ones most probably better communicate with healthcare providers and understand the educational message readily.

As a drug expert the pharmacist is considered as a valuable source of information about medication use and its safety. Participants interviewed manually trusted the pharmacist as a consultant of drug information more than those participated electronically. In a study conducted in New Zealand, the public preferred the doctor and pharmacist as top sources of information about medicines and the internet was ranked as a lower trusted source [18].

Definitely multiple factors, cultural, social, economic and health system related ones can influence the public knowledge, attitudes and practices on important issues related to medication use and safety. Future research should focus on these factors to better understand why these gaps in the three studied domains.

Recruitment of people from one city in Saudi Arabia limits the generalizability of the obtained results to the whole population in the country. Future studies in order to better explore the public knowledge, their attitudes and practices on medication use must recruit a large representative sample from the whole country.

CONCLUSIONS

Knowledge on medication use and safety was moderate. There were gaps in all studied domains. There was variation in total knowledge on medication use and its safety between respondents recruited manually and electronically.

RECOMMENDATIONS

Public education on medication use and safety through educational campaigns that bring about positive changes is imperative. Multi-educational interventions can be tailored and designed according to the local social and cultural contexts. The interventions can be delivered through the well-distributed primary healthcare facilities in the city.

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