

The Dangerous Effects of Excessive Use of Antibiotics among Community in Saudi Arabia

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ABSTRACT

Background: antibiotic misuse is a common problem around the world with special regard to developing countries. It could result in increased rate of infections and admission to hospitals, high treatment costs as well as increased mortality rates.

Aim of the work: this study aimed to assess the general knowledge of community population in Saudi Arabia (KSA) regarding the adverse effects of antibiotics overuse.

Patients and methods: this was a cross-sectional descriptive study conducted among 1700 Saudi adults from the period of February to June 2017. Respondents were interviewed and filled out a questionnaire that consisted of 3 parts the: first parts considered their demographics, the other parts regards the use of antibiotics and knowledge about their adverse effects.

Results: the pattern of antibiotic use showed that 76.8% have recently used antibiotics. The major source of antibiotic use was pharmacist (46.5%) followed by physician (23.9%). About 71.7% used antibiotics for cold and cough and 61.8% used antibiotics for viral diseases. The level of knowledge toward excessive use of antibiotics was in adequate among 61% of respondents and was good among 39% of them. A significant correlation was detected between young age and good knowledge.

Conclusion: there was a lack in the public knowledge regarding the adverse effects of antibiotic overuse among Saudi subjects. Educational programs may be performed to fill up the awareness gaps and enhance the knowledge thus decreasing the costs paid by health authorities to manage the adverse effects of antibiotics overuse.

Keywords: KSA, Knowledge, adverse effects, antibiotic overuse.

INTRODUCTION

The use of antibiotics has been extended during the last decades and resulted in increasing the life expectancy and treatment of most of communicable diseases. Use of antibiotics has shifted from communicable to non-communicable diseases^(1, 2). Also, antibiotic resistance have emerged from the excessive and improper use of antibiotics that led to antibiotic resistance around the world^(3, 4). In addition, the misuse of antibiotics was associated with failure in the treatment, high morbidity and mortality rates as well as higher rates of hospital admission and stay^(5, 6).

Moreover, overuse of antibiotics has been emerged in decreasing the beneficial gut microorganisms as well as disturbing its function and composition which affects the health^(7, 8). This study aimed to assess the general knowledge of community population in Saudi Arabia (KSA) regarding the adverse effects of antibiotics overuse.

PATIENTS AND METHODS

This was a cross-sectional study that conducted in Saudi Arabia during the period of February to June 2017. A sample of 1700 Saudi participants from different parts of KSA was enrolled in this study

using the stratified random sampling technique. The inclusion criteria were age above 20 years, Saudi subjects and able to read and write in Arabic.

Study tools: after reviewing the available literature, a reliable simple designed questionnaire was distributed among the participants who were interviewed by the researchers in different sites including supermarkets, community pharmacies and shopping malls. The questionnaire consisted of 3 parts: the first part considered their demographics, the other parts regards the use of antibiotics and knowledge about its adverse effects. The validity of the questionnaire was enhanced after carrying out a pilot study that among 40 participants then the final version was corrected according to the subject's understanding.

Ethical approval

An informed consent was obtained from the respondents before participating in the study.

Statistical analysis

The obtained data were carried out using Statistical Package for Social Sciences (SPSS,

version 19.0) for windows. The results were expressed as numbers and percentages.

RESULTS

Demographics of the studied subjects

The age of most respondents (76.5%) was ranged from 20-40 years old and the rest (23.5%) was ranged from 41-60 years old. More than half of the respondents were females (59%) and 41% were males. The majority (67.4%) was graduated from college, 22.4% had secondary school degree and 10.2% had a primary school degree (Table 1)

Table 1: characteristics of participants (1700)

Age (year)	No.	Percentage (%)
20-40	1300	76.5%
41-60	400	23.5%
Gender		
Female	1003	59%
Male	697	41%
Educational Level		
Collage	1145	67.4%
Secondary School	381	22.4%
Primary School	174	10.2%

Antibiotic use

The pattern of antibiotic use was presented in Table 2.

The majority of respondents (76.8%) had recently used antibiotics. The major source of antibiotic use was pharmacist (46.5%) followed by physician (23.9%) and friend (11.2%) and the least percentage was self-prescription for antibiotics (9.4%). Also, a high pattern of antibiotic use (71.7%) was found among the participants regarding the usage of antibiotics for cold and cough, while 22.1% sometimes use antibiotics for cold and cough and 6.2% never used antibiotics for cold and cough. In addition, a high percentage of them (61.8%) used antibiotics for viral diseases.

Table 3: awareness regarding the antibiotics misuse

	Agree	Disagree
1- Antibiotics are used for bacterial infections	866 (51%)	834 (59%)
2- Antibiotics must not be used without prescriptions	780 (45.9%)	920(54.1%)
3- Specific antibiotics are needed for specific infections	900 (53%)	800 (47%)
4- Antibiotics overuse could result in many adverse effect	867 (51%)	833 (49%)
5- Antibiotic could interfere with other drugs and decrease its efficiency	631 (37.1%)	1069 (62.9%)
6- Antimicrobial resistance is the most common result of antibiotics overuse	1320 (77.6%)	380 (22.4%)
7- Antibiotics overuse could derive destruction of good intestinal flora	420 (24.7%)	1280 (75.3%)
8- Antibiotics overuse could result in higher costs of rates and increasing the risk of infections	741 (35.6%)	959 (56.4%)

Table 2: pattern of antibiotic use (1700)

	No.	Percentage (%)
Have you recently used antibiotics?		
Yes	1580	76.8%
No	476	23.2%
What is your source for antibiotic use?		
Physician	560	23.9%
Friends and relatives	190	11.2%
Self-prescribed	160	9.4%
Pharmacist	790	46.5%
Frequency of using antibiotics for cold and cough?		
Always	1219	71.7%
Sometimes	376	22.1%
Never	105	6.2%
Do you use antibiotics for viral disease?		
Yes	1050	61.8%
No	650	38.2%

Assessment of knowledge of included subjects:

Table 3 showed that about half of respondents (51%) had adequate knowledge regarding the usage of antibiotics for bacterial infections. About 45.9% of subjects agreed that antibiotics should be used with prescription, while 53% disagreed. About half of participants (51%) agreed that specific antibiotics are needed for specific infections. Also, 51% of subjects have adequate knowledge regarding the adverse effects of excessive antibiotics use. An adequate knowledge was found among participants regarding the interference of antibiotics with other drugs (37.1%), the destructive effects of antibiotics on the intestinal flora (24.7%) and the higher costs and the increased risks of infections that result from the excessive use of antibiotics was detected in 35.6% of subjects. However, a good level of knowledge was found between the subjects about the effects of antibiotics on microbial resistance (77.6%).

Level of knowledge

The level of knowledge toward excessive use of antibiotics was inadequate among 61% of respondents and was good among 39% of them.

Table 4: the level of knowledge toward antibiotics misuse among the respondents

Knowledge level	Frequency	Percent (%)
Good	663	39
Poor	1037	61
Total	1700	100,0

Association between subject's knowledge and demographics

There was a significant correlation between young age and good knowledge, while neither gender nor educational level showed a statistical correlation with knowledge (Table 5).

Table 5: association between subject's awareness and demographic variables:

	Good (n=663)		Poor (n=1037)		P-value
	No.	%	No.	%	
Age					
20-40	544	82.1%	756	72.9%	0.02*
40-60	119	17.9%	281	27.1%	
Gender					
Female	398	60%	605	58.3%	0.51
Male	265	40%	432	41.7%	
Educational Level					
Collage	436	65.8%	709	68.3%	0.062
Secondary School	133	21%	248	24%	
Primary School	94	14.2%	80	7.7%	

DISCUSSION

This study evaluated the knowledge among Saudi subjects in different parts of KSA about the adverse effects of excessive and misuse of antibiotics. The overall knowledge about the adverse effects of antibiotics was inadequate among most of the participants. This also was presented in most of studies conducted in many countries⁽⁹⁻¹¹⁾.

Most of respondents have recently used antibiotics as well as the majority used them for viral diseases and for cold and cough. These results are similar to other studies conducted in KSA that showed a wrong practice among the Saudi subjects as most of them would use antibiotics without prescriptions, they used antibiotics for cough and cold^(12, 13).

The majority of respondents had inadequate knowledge regarding the use of antibiotics without prescriptions. In consistence, a same pattern of antibiotic use without prescriptions was found in KSA⁽¹²⁻¹⁴⁾.

The inadequate knowledge was found among the participants regarding the adverse effects of using antibiotics on intestinal flora, increased risks of infections as well as drug interference with

antibiotics. In accordance, the majority of respondents believed that antibiotics are used for cold and fever⁽⁷⁾. The knowledge about antibiotic resistance was high among most of subjects, but many thought that it may be used for treatment of viral infections^(15, 16). Also, the same pattern was found among adult subjects in the United Kingdom as the majority did not know the uselessness of antibiotics in Flu and fever⁽¹⁷⁾.

The knowledge was significantly higher among the young participants about adverse effects and antibiotic resistance which was in the same respect with the present results⁽⁹⁾. However, contrast studies showed that the level of education was associated with knowledge in several studies^(16, 18-20).

CONCLUSION

There is a lack in the public knowledge regarding the adverse effects of antibiotic overuse among Saudi subjects. Educational programs may be performed to fill up the awareness gaps and enhance the knowledge, thus decreasing the costs paid by health authorities to manage the adverse effects of antibiotics overuse.

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