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Original Research

Awareness and Prevalence of Antibiotics Self-prescription in Eastern Region of Saudi Arabia

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ABSTRACT

Aim

To evaluate Saudi patients' attitude toward antibiotics use and their awareness of the risk of antibiotics self-prescription and measure the prevalence of antibiotics self-prescription in the eastern region of KSA.

Methods

This cross-sectional study was conducted on general Saudi public residing in the eastern region of KSA. A closed ended questionnaire was utilized in order to gather information from the people who are aged 20 or more and have used antibiotic. Online survey links were sent out to a convenient sample of Saudi population using emails and social media. Data was analyzed using SPSS.

Results

A total of 584 adult participants completed the online survey, which comprised of 16% (n=89) males and 84% (n=489) females. The majority of the participants reported they use antibiotic after the doctor's prescription. It was found that majority of male and female use antibiotic as a painkiller. All the participants with various education levels used antibiotic as painkiller.

Conclusion

Older age group antibiotic users tend to have better knowledge and attitude towards the use of antibiotics. Males showed better attitude towards antibiotic use as compared to the females.

INTRODUCTION

Antibiotics are medications used to prevent and treat bacterial infections. Antibiotic resistance is one of the world's major concern public health problems. Antibiotic resistance occurs when bacteria change in response to the use of these medicines and the bacteria become antibiotic-resistant. These bacteria may infect humans and animals, and the infections they cause are harder to treat than those caused by non-resistant bacteria. Antibiotic resistance leads to higher medical costs, prolonged hospital stays, and increased mortality.[1] The definition of "self-medication" by the World Health Organization (WHO) is 'the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms'.[2]

In most parts of the world over 50% of antibiotics are purchased and used over the counter.[3] It has been reported that self-medication is a common practice among healthcare workers.[4] It is assumed that the prevalence rate of self-medication is high in Kingdom of Saudi Arabia (KSA)[5]. A recent study found that there is a bad attitude related to antibiotics usage, with many

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misconceptions and poor knowledge. Moreover, the necessity of antibiotics for treatment of dental disease or after dental procedures was totally unclear for the respondents.[6] Another study conducted on students, a high percentage of inappropriate antibiotic knowledge and a high rate of self-medication with antibiotics was found among students.[7]

Moreover the level of self-prescribed antibiotics was found to be relatively high, 63.6 % reported to have purchased antibiotics without a prescription from pharmacies. The availability of antibiotics without prescription was found to be positively associated with self-medication.[8-9] With increased public awareness on the appropriate use of antibiotics and the proper use of treatment guidelines for antibiotic therapy self-prescription of antibiotics will be reduced significantly.[7] This study aims to evaluate Saudi patients' attitude toward antibiotics use and their awareness of the risk of antibiotics self-prescription and measure the prevalence of antibiotics self prescription in the eastern region of KSA.

Methods

This cross-sectional study was conducted on general Saudi public residing in the eastern region of KSA to evaluate attitude toward antibiotics use and their awareness of the risk of antibiotics self-prescription and measure the prevalence of antibiotics self prescription. A closed ended questionnaire was utilized in order to gather information from the people who are aged 20 or more and have used antibiotic. Population who are physically and mentally unable to participate or unable to answer the questions were not considered. Ethics committee approved the protocol for this study.

Questionnaire included the demographics, questions related to use of antibiotic and self-prescription of antibiotic experiences. Online survey links were sent out to a convenient sample of Saudi population using emails and social media. Descriptive statistics was performed to present the overview of findings. Cross-tabulation and Chi-square tests was used to determine the association between the study groups. Data were analyzed using SPSS Version 21. A p value of ≤ 0.05 was considered as statistically significant.

Table 1. Association of responses by age group

Item	20-30 years	31-40 years	41-50 years	51-60 years	61-70 years	71 or more	p value
Do you use antibiotics as a pain killer?	Yes: 99%	Yes: 91%	Yes: 100%	Yes: 100%	Yes: 100%	Yes: 100%	0.000
How do you get your antibiotics?	Doctor's prescription: 84% Pharmacist's advice: 5% Non-medical person's advice:2%	Doctor's prescription:88% Pharmacist's advice:9% Non-medical person's advice:1% Personal	Doctor's prescription: 85% Pharmacist's advice:6% Non-medical person's advice:6%	Doctor's prescription: 85% Pharmacist's advice: 6% Non-medical person's advice: 6%	Doctor's prescription: 100% Pharmacist's advice: 0% Non-medical person's advice: 0%	Doctor's prescription: 100% Pharmacist's advice: 0% Non-medical person's advice: 0%	0.936

	Personal choice:9%	choice:1%	Personal choice:3%	Personal choice:3%	Personal choice: 0%	Personal choice: 0%	
Reason for not consulting a doctor	Money:14% Unavailability of Medical care:8% Fear of the hospital:10% I can diagnose myself:27% No time:30%	Money:9% Unavailability of Medical care:12% Fear of the hospital:12% I can diagnose myself:25% No time:27%	Money:6% Unavailability of Medical care:9% Fear of the hospital:20% I can diagnose myself:22% No time:20%	Money:3% Unavailability of Medical care:12% Fear of the hospital:0% I can diagnose myself:31% No time:21%	Money:0% Unavailability of Medical care:100% Fear of the hospital:0% I can diagnose myself:0% No time:0%	Money:0% Unavailability of Medical care:0% Fear of the hospital:0% I can diagnose myself:0% No time:0%	0.001
I normally stop taking antibiotics when I start feeling well	Yes: 57%	Yes: 38%	Yes: 26%	Yes: 18%	es:100%	Yes:0%	0.000
I usually keep antibiotic stocks at home	Yes: 31%	Yes: 28%	Yes: 17%	Yes: 6%	Yes:0%	Yes:0%	0.000
I usually read the instructions label of the antibiotics	Yes: 31%	Yes: 28%	Yes: 17%	Yes: 6%	Yes:0%	Yes:0%	0.000
If the doctor prescribes antibiotic , I will accept to use it	Yes: 76%	Yes: 71%	Yes: 67%	Yes: 70%	Yes:100%	Yes:100%	0.000
Do you Take antibiotics with another medicine	Yes: 55%	Yes: 72%	Yes: 76%	Yes: 85%	Yes:100%	Yes:100%	0.000
Have you used antibiotics when there is no necessity	Yes: 6%	Yes: 3%	Yes: 7%	Yes: 3%	Yes:0%	Yes:0%	0.000
Do you complete the course of the prescribed antibiotics	Yes: 68%	Yes: 77%	Yes: 89%	Yes: 88%	Yes:100%	Yes:100%	0.000
When did you last use an antibiotic?	Less than 6 months ago: 37% Between 6 and	Less than 6 months ago: 32% Between 6 and 12 months ago: 24%	Less than 6 months ago: 33% Between 6 and	Less than 6 months ago: 33% Between 6 and	Less than 6 months ago: 0% Between 6 and	Less than 6 months ago: 0% Between 6 and	0.000

	12 months ago: 26% More than a year ago: 35%	More than a year ago: 43%	12 months ago: 22% More than a year ago: 46%	12 months ago: 12% More than a year ago: 55%	12 months ago: 0% More than a year ago: 100%	12 months ago: 100% More than a year ago: 0%	
Do you think antibiotics should be accessed without a prescription	Yes: 11%	Yes: 9%	Yes: 11%	Yes: 0%	Yes:0%	Yes:100%	0.000
Have you purchased antibiotics from the pharmacy without a prescription?	Yes: 30%	Yes: 37%	Yes: 43%	Yes: 36%	Yes:0%	Yes:0%	0.366
Do you accept to use an antibiotic directly from the pharmacist without physician referral?	Yes: 37%	Yes: 31%	Yes: 37%	Yes: 33%	Yes:0%	Yes:0%	0.836
Do you keep the antibiotic for future use?	Yes: 40%	Yes: 36%	Yes: 30%	Yes: 12%	Yes:100%	Yes:0%	0.267
When you buy a medication without prescription, do you read the pamphlet?	Yes: 81%	Yes: 85%	Yes: 91%	Yes: 94%	Yes:100%	Yes:100%	0.063
When you buy a medication without a prescription, do you tell the pharmacist of other medications you use at home?	Yes: 63%	Yes: 67%	Yes: 61%	Yes: 67%	Yes:100%	Yes:100%	0.963
Do you know the route of administration, dosage, and side effects of the medicine you	Yes: 77%	Yes: 80%	Yes: 78%	Yes: 88%	Yes: 0%	Yes:100%	0.797

purchased without a prescription?							
Have you ever used prescription medications along with medications you purchased without prescription?	Yes: 20%	Yes: 22%	Yes: 29%	Yes: 27%	Yes: 0%	Yes: 0%	0.702
Does the pharmacist provide information on drug interactions of the medications you have purchased without a prescription and those you are currently using?	Always :6% Usually :9% Frequently : 7% Sometimes: 24% Occasionally: 9% Rarely: 24% Never:22%	Always :7% Usually :11% Frequently : 4% Sometimes: 25% Occasionally: 3% Rarely: 22% Never:28%	Always :0% Usually :9% Frequently : 0% Sometimes: 15% Occasionally: 0% Rarely: 35% Never:39%	Always :3% Usually :3% Frequently : 9% Sometimes: 12% Occasionally: 3% Rarely: 42% Never:27%	Always :0% Usually :0% Frequently : 0% Sometimes: 0% Occasionally: 0% Rarely: 100% Never: 0%	Always :0% Usually :0% Frequently : 0% Sometimes: 0% Occasionally: 0% Rarely: 0% Never:100%	0.00

Table 2. Association of responses by gender

Item	Male	Female	p value
Do you use antibiotics as a pain killer?	Yes: 89%	Yes: 94%	0.000
How do you get your antibiotics?	Doctor's prescription: 94% Pharmacist's advice: 4% Non-medical person's advice:0% Personal choice:3%	Doctor's prescription:83% Pharmacist's advice:7% Non-medical person's advice:3% Personal choice:7%	0.390
Reason for not consulting a doctor	Money:15% Unavailability of Medical care:19% Fear of the hospital:6%	Money:11% Unavailability of Medical care:8% Fear of the hospital:11%	0.008

	I can diagnose myself:25% No time:20%	I can diagnose myself:27% No time:29%	
I normally stop taking antibiotics when I start feeling well	Yes: 50%	Yes: 48%	0.000
I usually keep antibiotic stocks at home	Yes: 34%	Yes: 27%	0.000
I usually read the instructions label of the antibiotics	Yes: 56%	Yes: 62%	0.000
If the doctor prescribes antibiotic ,I will accept to use it	Yes: 85%	Yes: 72%	0.000
Do you Take antibiotics with another medicine	Yes: 76%	Yes: 60%	0.000
Have you used antibiotics when there is no necessity	Yes: 3%	Yes: 5%	0.000
Do you complete the course of the prescribed antibiotics	Yes: 72%	Yes: 73%	0.000
When did you last use an antibiotic?	Less than 6 months ago: 31% between 6 and 12 months ago: 22% more than a year ago: 45%	Less than 6 months ago: 36% between 6 and 12 months ago: 25% more than a year ago: 38%	0.000
Do you think antibiotics should be accessed without a prescription	Yes: 12%	Yes: 11%	0.000
Have you purchased antibiotics from the pharmacy without a prescription?	Yes: 42%	Yes: 31%	0.367
Do you accept to use an antibiotic directly from the pharmacist without physician referral?	Yes: 39%	Yes: 35%	0.863
Do you keep the antibiotic for future use?	Yes: 44%	Yes: 36%	0.595
When you buy a medication without prescription, do you read the pamphlet?	Yes: 76%	Yes: 84%	0.415
When you buy a medication without a prescription, do you tell the pharmacist of other medications you use at home?	Yes: 60%	Yes: 65%	0.807
Do you know the route of administration, dosage, and side effects of the medicine you purchased without a prescription?	Yes: 76%	Yes: 79%	0.901
Have you ever used prescription medications along with medications you purchased without prescription?	Yes: 29%	Yes: 20%	0.107
Does the pharmacist provide information on drug interactions of the medications you have purchased without a prescription and those you are currently using?	Always :7% Usually :11% Frequently : 7% Sometimes: 19% Occasionally: 2%	Always :5% Usually :9% Frequently : 5% Sometimes: 23% Occasionally: 7%	0.000

	Rarely: 31% Never:22%	Rarely: 25% Never:26%	

Table 3. Association of responses by educational level

Item	Primary	Middle	Secondary	College	Postgrad	p value
Do you use antibiotics as a pain killer?	Yes: 100%	Yes: 92%	Yes: 93%	93%	94%	0.000
How do you get your antibiotics?	Doctor's prescription: 100% Pharmacist's advice: 0% Non-medical person's advice: 0% Personal choice: 0%	Doctor's prescription:78% Pharmacist's advice:22% Non-medical person's advice:0% Personal choice:0%	Doctor's prescription: 87% Pharmacist's advice:5% Non-medical person's advice:3% Personal choice:5%	Doctor's prescription: 84% Pharmacist's advice: 5% Non-medical person's advice: 2% Personal choice:8%	Doctor's prescription: 87% Pharmacist's advice: 0% Non-medical person's advice: 0% Personal choice: 3%	0.585
Reason for not consulting a doctor	Money:20% Unavailability of Medical care:0% Fear of the hospital:20% I can diagnose myself:0% No time:40%	Money:0% Unavailability of Medical care:17% Fear of the hospital:8% I can diagnose myself:42% No time:17%	Money:18% Unavailability of Medical care:11% Fear of the hospital:15% I can diagnose myself:22% No time: 20%	Money:11% Unavailability of Medical care:9% Fear of the hospital:9% I can diagnose myself:28% No time:30%	Money:6% Unavailability of Medical care:12% Fear of the hospital:9% I can diagnose myself:27% No time:21%	0.032
I normally stop taking antibiotics when I start feeling well	Yes: 60%	Yes: 50%	Yes: 48%	Yes: 51%	Yes:9%	0.000
I usually keep antibiotic stocks at home	Yes: 0%	Yes: 17%	Yes: 23%	Yes: 31%	Yes: 12%	0.000
I usually read the instructions label of the antibiotics	Yes: 80%	Yes: 58%	Yes: 65%	Yes: 60%	Yes:60%	0.000
If the doctor prescribes antibiotic ,I will accept to use	Yes: 80%	Yes: 100%	Yes: 75%	Yes: 73%	Yes:70%	0.000

it						
Do you Take antibiotics with another medicine	Yes: 20%	Yes: 75%	Yes: 48%	Yes: 65%	Yes:73%	0.000
Have you used antibiotics when there is no necessity	Yes: 20%	Yes: 0%	Yes: 3%	Yes: 6%	Yes:3%	0.000
Do you complete the course of the prescribed antibiotics	Yes: 100%	Yes: 75%	Yes: 71%	Yes: 72%	Yes:85%	0.000
When did you last use an antibiotic?	Less than 6 months ago: 20% between 6 and 12 months ago: 0% more than a year ago: 80%	Less than 6 months ago: 33% between 6 and 12 months ago: 25% more than a year ago: 42%	Less than 6 months ago: 38% between 6 and 12 months ago: 23% more than a year ago: 37%	Less than 6 months ago: 35% between 6 and 12 months ago: 25% more than a year ago: 39%	Less than 6 months ago: 33% between 6 and 12 months ago: 27% more than a year ago: 40%	0.000
Do you think antibiotics should be accessed without a prescription	Yes: 40%	Yes: 0%	Yes: 16%	Yes: 10%	Yes: 12%	0.000
Have you purchased antibiotics from the pharmacy without a prescription?	Yes: 20%	Yes: 17%	Yes: 25%	Yes: 34%	Yes: 49%	0.298
Do you accept to use an antibiotic directly from the pharmacist without physician referral?	Yes: 20%	Yes: 25%	Yes: 35%	Yes: 38%	Yes: 21%	0.563
Do you keep the antibiotic for future use?	Yes: 20%	Yes: 50%	Yes: 31%	Yes: 40%	Yes: 24%	0.391
When you buy a medication without prescription, do you read the pamphlet?	Yes: 100%	Yes: 83%	Yes: 84%	Yes: 82%	Yes:88%	0.921
When you buy a medication without a prescription, do you tell the pharmacist of other medications you use at home?	Yes: 100%	Yes: 50%	Yes: 62%	Yes: 64%	Yes:73%	0.316
Do you know the route of administration, dosage, and	Yes: 60%	Yes: 75%	Yes: 85%	Yes: 76%	Yes: 91%	0.020

side effects of the medicine you purchased without a prescription?						
Have you ever used prescription medications along with medications you purchased without prescription?	Yes: 0%	Yes: 25%	Yes: 22%	Yes: 11%	Yes: 30%	0.516
Does the pharmacist provide information on drug interactions of the medications you have purchased without a prescription and those you are currently using?	Always : 20% Usually : 0% Frequently : 0% Sometimes: 40% Occasionally: 0% Rarely: 20% Never: 0%	Always : 0% Usually :25% Frequently : 0% Sometimes: 25% Occasionally: 0% Rarely: 42% Never:8%	Always : 5% Usually :9% Frequently : 3% Sometimes: 19% Occasionally: 6% Rarely: 24% Never:33%	Always :5% Usually :8% Frequently : 7% Sometimes: 23% Occasionally: 7% Rarely: 25% Never:24%	Always : 3% Usually : 2% Frequently : 3% Sometimes: 21% Occasionally: 6% Rarely: 33% Never: 21%	0.000

Results

A total of 584 adult participants completed the online survey, which comprised of 16% (n=89) males and 84% (n=489) females. The sample was divided into subgroups on the basis of age groups, where 64% (n=376) belonged to 20-30 years, 21% (n=122) to 31-40 years, 8% (n=46) to 41-50 years, 6% (n=33) to 51-60 years, 0.2% (n=1) to 61-70 years and merely 0.2% (n=1) over 70 years group. The participants were also grouped on the basis of their education level, which demonstrated that 1% (n=5) are primary level, 2% (n=12) are middle level, 19% (n=113) are secondary level, 72% (n=418) are college level and 6% (n=33) are postgraduate level.

The majority of the participants reported they use antibiotic after the doctor's prescription. The participants between 20-60 years age also reported that they cannot consult the doctor due to time factor. Most of the participants agreed that they like to complete the course of antibiotic, if prescribed by the doctor (Table 1). It was found that majority of male and female use antibiotic as a painkiller and are of the opinion that antibiotic should not be available without prescription from the doctor ($p<0.05$) (Table 2). All the participants with various education levels used antibiotic as painkiller. The majority of the participants read the pamphlet before using the antibiotic and are familiar with dosage and side effects of the medicines (Table 3).

Discussion

Self-medication is an essential determinant of improper use of antibiotics.[10] The current study aimed to determine the current trend of antibiotic usage among the Saudi public using a set of validated questions. As mentioned above, the sample was divided into sub categories based

upon gender, age groups, and educational levels. The present study found a large majority of participants (94%) using antibiotics using doctor's prescription. This is in contrary with the findings from a previous study which exhibited a poor knowledge and use of antibiotics among Saudi general public.[6]

Studies have reported different prevalence figures ranging from 43.2% to 91%.[11-13] It was interesting to observe that the older age group participants in the present study showed better attitude and knowledge regarding the use of antibiotics as compared to the younger ones. They were found to be keen on consulting their physicians before they could use any medication. In other words, they seldom used any medication without the prescription from their physician. There is a current trend of doctors advising their patients not to complete the antibiotics course in case they felt better during the course of treatment.

Inadequate public knowledge of antibiotics has been previously reported in several countries.[14-15] Findings from a similar previous study suggested that the majority (71%) of the respondents did not finish their antibiotics course as they felt better. Our study showed similar findings where 73% of the participants reported to have not completed their course. There is a need to improve the literacy level of medicine use and the patients must be updated by their physicians about any new development in these matters. One of the limitation of this study is that the findings may not be generalized to the whole of KSA.

Conclusion

Older age group antibiotic users tend to have better knowledge and attitude towards the use of antibiotics. Males showed better attitude towards antibiotic use as compared to the females. There was not distinct relationship between educational level and attitude or knowledge towards antibiotic use.

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