ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF RESEARCH IN PHARMACEUTICAL SCIENCES

Published by JK Welfare & Pharmascope Foundation Journal Home Page: https://ijrps.com

Assessment of attitudes and practices of young Saudi adults about the use of antibiotics in eastern providence, Saudi Arabia

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Article History:

Received on: 11.06.2018
Revised on: 08.08.2018
Accepted on: 12.08.2018

Keywords:

Medication Knowledge,
Health Knowledge,
Anti-Microbial Agents,
Young Adult,
Self-treatment,
Saudi Arabia

ABSTRACT

In the mentioned study, we planned to measure the attitudes and practices of young Saudi adults towards the usage of antibiotics. A descriptive survey was conducted among patients attending at Almana Group of Hospital Dammam & Al-Khobar, Saudi Arabia, a conveniently selected sample of 891 participants. Adopted written questions were used for collection of data. 1050 participants were approached, 891 granted to takes part in this study, giving a response rate of 84.85%. The study results indicated that 35.08% of the participants shown poor arrogances towards antibiotic usage. Both of them Healthcare related and Non-health-care were perceptively related with the positive attitudes towards antibiotic usage (p=0.001). It is shown that the practice of the participants towards antibiotics was relatively poor (35.25%). The huge number of participants agreed that they do not access a doctor for minor ailments. The main cause for not consulting a doctor was the high consultation charges (72%). Though, a huge number of respondents (94.97%) granted that there is a necessity to augment antibiotic education among the general public. The study outcomes recognized some crucial gaps in the attitudes and practices among the community of Dammam & Al- Khobar about the practice of antibiotics. Thus, for the upgrading of community knowledge and mutable their attitude towards antibiotic use along with proper interventions to regulate the ease of their accessibility can play an active role for the actual usage of antibiotics within the community.

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ISSN: 0975-7538

DOI: https://doi.org/10.26452/ijrps.v9i4.1682

Production and Hosted by

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INTRODUCTION

Lack of information, awareness, and insufficient patient education about antibiotics by the health care providers are the marshalling factors for the development of such resistance (Franco *et al.,* 2009). Non-Selective usage of antibiotics may prime to the expansion of antimicrobial resistance (Goossens *et al.,* 2005). Self-treatment with antibiotics is a common practice in many countries in the world but inclines to carry more impact in the developing world (Donkor *et al.,* 2012). A was carried out by Princeton University showed that antibiotic use increased by 36% globally in the past that antibiotic use increased by 36% worldwide in the past span (from 2000 to 2010) (Boeckel *et al.,* 2014).

The connotation among the development of resistance and unfortunate use of antibiotics has been demonstrated in the previous studies (Helena *et al.,* 1997; Austin *et al.,* 1999; Felmingham *et al.,* 2000). In Europe, the rate of antibiotic resistance diverges among different nations and such existence not only depends upon the dearth of infor-

mation and vigilance towards the expansion of microbial resistance but also depend upon unsuitable drug regulation in the countries (Pradier *et al.,* 1997; Cars *et al.,* 1995; Bjerrum *et al.,* 2004). A pilot study was conducted in Jordan has shown that the status of self-treatment with antibiotics is worryingly high (Al-Azzam *et al.,* 2007). It has been identified in some countries that the laws that stop over the pledge dispensing of antibiotics exist but not practicality followed in community locales (Väänänen *et al.,* 2006). The literature proved a high incidence of antibiotic misuse among Saudi community extending from 41%-92%, predominantly among the children (Nouf *et al.,* 2017).

Antibiotics are the most frequently prescribed, vented and jumble-sale drugs worldwide (Osama *et al.,* 2018; Azevedo *et al.,* 2009). In Saudi Arabia, antimicrobial agents are the leading group of drugs used in healthcare backgrounds besides Antidiabetic, antihypertensive and NSAID drugs (Igbeneghu *et al.,* 2013). The International Pharmaceutical Federation (FIP) Affirmation of Program Control on Antimicrobial Medicines Resistance (AMR) addition to WHO Global Strategy for Inhibition of Antimicrobial Resistance qualms the state members to launch educational and consciousness movement in reciprocation to antibiotic resistance (Azevedo *et al.,* 2009). In mandate to adopt appropriate procedures to fight against antimicrobial battle in the opinion of these testimonials, the examination of awareness about antibiotics and the aspects inducing the usage of antibiotic without prescription among Saudi population is thus significant. A maximum number of the studies about the use of antibiotic in Saudi Arabia are restricted to the valuation of general public knowledge and attitudes with regard to antibiotics (WHO Report Oct-2016; Al-Shibani *et al.,* 2017; Tatyana *et al.,* 2014). Literature advocate that people in the younger age group are more likely to employ antibiotics and have poor knowledge of antibiotics usage (WHO Report Oct-2016). There is a scarcity of records relating to the arrogance and practice of young adults regarding antibiotics usage. The motto of the present study was to a degree the attitudes and practice of young Saudi adults as regards antibiotics usage.

METHODS

An explanatory, cross-sectional study was carried out for a period of 3 months between January to March 2018, with the leading objective to measure the arrogance and practices of young Saudi adults with respect to antibiotics usage.

Study design, participants and study site

The study was conducted in the Almanack Group of Hospital Dammam and Al-Khobar, situated in the Eastern providence of Saudi Arabia.

Sample and sample size

The sample size was fixed using Krejcie & Morgan's sample size calculator (Krejcie *et al.,* 1970). A precision sampling method was used to hire a sample of 1050 participants from Almana Group of Hospital visited outpatient and inpatient department, Dammam and Al-Khobar, Saudi Arabia.

Research instrument

An adopted self-administered questionnaire was used to gather the data from the participators. The set of questions included in three sections. The first segment confined of items linked to demographic information of the participants. The second segment evaluated the attitudes of contributors regarding antibiotics. Participants' answers were documented based on a 3-point Likert scale of settlement. The third segment measured the practices of participants with respect to antibiotics usage. A dichotomous scale of 'Yes' or 'No' was adopted to appraise the considerate of participants regarding the usage of antibiotics.

Data analysis

The answers of the contributors were examined using SPSS v.21. The evocative analysis was used to quick the demographic information in incidences and percentages. The attitude scores oscillated from 0-12. Each declaration was categorized with positive or negative attitudes.

A score of 1 was known to positive attitude through a score of 0 was recognized to the negative attitude with respect to each statement. Attitude scores for individual statements were compressed and calculated to give the overall attitude score of a participant. The practice scores fluctuated from 0-10. Each declaration was labelled with good or poor practices. A score of 1 was assumed to good practice while a score of 0 was assumed to poor practice concerning every statement. Both positive and negatively articulated declarations are obtainable in the attitudes and practices segment. The proposal of attitude and practice scores with respect to the demographic variables was evaluated by logistic regression analysis. A p-value of <0.05 was marked to be statistically relevant.

Ethical approval

The study was ethically sanctioned by Institutional Review Board of Scientific research unit (SRU) of Mohammed Almana College of Health Sciences, Saudi Arabia. Contributors were educated about

Table 1: Demographic summary of the participants

Demographic Data	Frequency	%
Age (Years)		
18-24	401	44.60
25-35	498	55.39
Gender		
Male	202	22.46
Female	697	77.53
Marital status		
Single	458	50.94
Married	441	49.04
Educational level		
Secondary school	155	17.24
College	177	19.68
University	567	63.07
Occupation		
Health-care related	425	47.27
Non-health-care related	474	52.72
Do you have any health insurance?		
Yes	430	47.83
No	469	52.16

Table 2: Attitude of participants regarding antibiotic usage

Attitude regarding Antibiotic Usages	Agree	Unsure	Disagree
Antibiotics are safe drugs.	254* (28.44%)	201 (22.5%)	438 (49.04%)
Antibiotics are effective for fever.	392 (43.84%)	152(17.0%)	348* (38.92%)
Antibiotics are effective for cold.	309(34.56%)	124(13.87%)	461* (51.56%)
Antibiotics are effective for a headache.	76(8.1%)	117(13.10%)	700* (78.38%)
I expect the doctors to prescribe me antibiotics for my bacterial infection.	644* (71.95%)	145(16.20%)	106(11.84%)
I expect the doctors to prescribe me antibiotics for my viral infection.	347(38.77%)	404(45.13%)	144* (16.08%)
I keep antibiotics at home in case of emergency.	144(16.08%)	52(5.81%)	699* (78.10%)
I suggest my antibiotics to my family members who need it.	80(9.94%)	53(5.92%)	761* (85.21%)
Antibiotics can be taken according to product leaflet/label without consulting doctors.	90(10.06%)	59(6.5%)	745* (83.33%)
The expiry date of antibiotics should be checked before administered.	825* (92.28%)	16(1.78%)	54(6.04%)
Antibiotic resistance is dangerous for the society.	510* (57.04%)	245(27.40%)	139(15.54%)
It is necessary to enhance antibiotic education among the public.	850* (94.97%)	19(2.12%)	26(2.90%)

the drives of this study. The contribution of rere-spondents were intended and their answers were dealt with the high level of confidentiality and se-crecy.

RESULTS

All the survey form were filled by the contributors and were returned with a response rate of 84.85%. Demographic features of respondents' are summa-rized in Table 1.

The mean age of the respondents was 25.98 ± 4.57(years). Of the 981 respondents, 202 (22.46%) were male and 697 (77.53%) were female. All the participant's (100%) had completed not less than secondary school. A nearby half of the participant's (47.27%) worked in a health-related profession while more than half of the participant's (52.75%) employed in health care fields. 430 (47.83%) re-spondents were concealed by health insurance.

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Table 3: Relationship of demographic characteristics with the attitude towards antibiotics

	Attitude towards antibiotics		p-value	Adjusted* OR (95% CI)
	Positive	Negative		
Age (Years)				
18-24	1773 (36.01%)	3079 (63.98%)	0.025	0.8456
25-35	2421 (41.20%)	3555 (59.68%)		(0.7821-0.9141)
Gender				
Male	872 (35.97%)	1552(64%)	0.216	0.9424
Female	3124 (38.36%)	5240 (62.64%)		(0.8578- 1.0353)
Marital status				
Single	2307 (41.97%)	3189 (58.02%)	0.020	1.4946
Married	1726 (32.61%)	3566 (67.4%)		(1.3817- 1.6168)
Educational level				
Secondary school	766 (41.18%)	1094 (58.81%)	0.001	0.7589
College	737 (34.69%)	1387(65.30%)	0.001	(0.6674-0.8629)
University	2084 (30.62%)	4720 (69.37%)	0.001	0.6306 (0.5673-0.7009)
Occupation				
Health-care related	1143(23.11%)	3801(76.88%)	0.001	0.4469
Non-health-care related	2288 (40.22%)	3400(59.77%)		(0.4106- 0.4864)

Table 4: Antibiotics practices amongst participants

Statements	Yes	No
1. I use antibiotics when I have a common cold.	171(19.04%)	727(81.04%)*
2. I use antibiotics when I have a cough.	97 (10.81%)	800(89.81%)*
3. I use antibiotics whenever I am not feeling well.	853(95.41%)	41(4.5%)*
4. I use leftover antibiotics.	76(8.45%)	823(91.54%)*
5. I keep antibiotic for future use.	141(15.68%)	754(83.87%)*
6. I take antibiotic without consulting the doctor most of the time.	95(10.62%)	799(98.37%)*
7. I discontinue antibiotics once symptoms subside.	313(34.93%)	583(59.24%)*
8. I return the leftover antibiotics to the pharmacist/doctor	58(6.48%)*	837(93.51%)
9. I consult a pharmacist for the modification of my prescription	340(3.80%)*	553(61.92%)
10. I follow correct dosage instruction	844(94.30%)*	51(5.6%)

*Good practice

Table 5: a Common source of antibiotics and reason for not consulting the physician

Statements	Frequency	%
From whom would you get the information about antibiotics?		
Friends	46	5.03
Community pharmacists	474	53.07
Books/ Websites	239	26.76
School/ University	134	15.05
I usually obtain antibiotic from:		
Hospital	89	9.96
Clinic	668	74.80
Retail pharmacy	135	15.11
Use someone else's	3	0.3
What are your reasons for not consulting physician:		
I feel inconvenient to see a physician	21	2.35
I find it expensive to see a physician	643	72
I take antibiotics based on advice from family members or friends	61	6.83
I know how to treat my illness	99	11.08
I have unpleasant experience from previous physician visits	27	3.02
I do not see a doctor for a minor illness	19	2.12

Table 6: Relationship of demographic characteristics with practice regarding antibiotics

	Practice towards antibiotics		P	Adjusted* OR
	Poor	Good	Value	(95% CI)
Age (Years)				
18-24	1143 (28.50%)	2867 (71.49%)	0.0017	0.8614 (0.7844-0.9459)
25-35	1273 (25.56%)	3707 (74.43%)		
Gender				
Male	764 (34.72%)	1436 (65.27%)	0.005	0.6702 (0.6048-0.7427)
Female	1832 (26.28%)	5138 (73.71%)		
Marital status				
Single	1307 (28.53%)	3273 (71.46%)	0.029	0.8413 (0.7662-0.9238)
Married	1109 (25.14%)	3301 (74.85%)		
Educational level				
Secondary school	428 (27.61%)	1122 (72.38%)	0.278	0.8831 (0.7565-1.0308)
College	446 (25.19%)	1324 (74.80%)		0.9498 (0.8374-1.0774)
University	1508 (26.59%)	4162 (73.40%)		
Occupation				
Health-care related	1012 (23.81%)	3238 (76.18%)	0.011	0.8766 (0.7919-0.9704)
Non-health-care related	914 (21.50%)	3336 (78.49%)		

employed non-healthcare fields. 430 (47.83%) respondents were concealed by health insurance.

The practice of participants regarding antibiotics usage is presented in Table 4. Nearly one-fifth of the respondents (n=171, 19.04%) granted that they use antibiotics while they suffer from common cold. While 313 participants (34.93%) conveyed that they discontinue antibiotic once symptoms abate. Nearly 93.51%, (n=837) of the participants indicated that they would not yield the leftover antibiotics to the pharmacist/physician.

Table 5 signifies the common source of antibiotics and causes for not consulting the physicians. About 53% (n=474) of the participants indicated that Community pharmacists were the greatest common source of information about antibiotics. The clinic was the most common source for the participants to receive antibiotics (n=668, 74.80%). A significant number (n=643, 72%), of respondents, reported that expensive to see the physician.

Table 6 signifies the relationship of demographic characteristics with practice regarding antibiotics. Age, Gender, marital status, and occupation were knowingly related to the practices of participants about antibiotics usage ($p<0.05$). The practices of female contributors were healthier than their male counterparts (OR=0.8614, $p<0.05$).

DISCUSSION

In the existing study projected the attitudes and practice of antibiotics amongst young adults in Dammam and Al Khobar, Eastern Province, Saudi Arabia. Antibiotic usage inside the general community is mutual practice throughout the world. By the rise in antibiotic resistance over the former decade, the factors for the use of antibiotics without prescription amongst the general public should be noticeably implicit. The response rate in the existing study was about 97% which was relatively high as related to other studies piloted previously on the same subject (Osama *et al.,* 2018; Nouf *et al.,* 2017).

The outcomes have shown that small study population was fewer knowledgeable relating to the warning of antibiotics for the treatment of common cold and cough. This might be due to recurrent dispensing of antibiotics for a limited viral infection that prejudiced the public sensitivity in the usage of antibiotics in treating diverse ailments (Osama *et al.,* 2018). The abuse of antibiotics will upsurge the peril of antibiotic resistance (Krejcie *et al.,* 1970).In a directive to checked the development of resistance, stringent measures must be taken to expand the high penalising guidelines which can evade the easiness with which antibiotics can be assimilated from the community pharmacies in Saudi Arabia. Besides attentive measures need to be engaged to monitor the irrational dispensing of antibiotics from community pharmacies. Moreover, a penalty should be obligatory on the dispensing pharmacists and the pharmacy owners who dispense antibiotics without a medical prescription issued by licensed physicians.

Most of the respondents (59.24%) had accurate knowledge of the need to sample the full course antibiotics even if their symptoms diminished. This outcome is relatively better than preceding studies organize in Riyadh, Saudi Arabia (Khalil *et al.,* 2017). Though, research conducted in the commu-

nity of Saudi Arabia, presented a healthier understanding of participants about the achievement of antibiotic course than this study (Tatyana *et al.,* 2014). These results display that a great magnitude of participants (34.93%) withdraw their antibiotics when their symptoms decrease. Around 94.30% of respondents followed the precise dosage directions of antibiotics usage. Only 6.48% of participants refunded the leftover antibiotics to the pharmacist or doctor which is in stripe with alternative Saudi study conducted in Riyadh (Krejcie *et al.,* 1970).

Our verdict on keeping antibiotic for future usage by the participants was analogous to formerly available studies (Khalil *et al.,* 2017). Incongruous regulation over the availability of antibiotics could partly contribute to improper antibiotics use in the community. Only a slight proportion (10.62%) of respondents demanded that they were using antibiotics deprived of consulting the doctor all-out of the time. This verdict endorses the formerly available result where 23.9% of respondents get their antibiotics after a consultation with a doctor (Khalil *et al.,* 2017). In the current study, we found that the common sources of obtaining antibiotics were a hospital (74.80%) slightly higher than the one described by Abujheisha (Osama *et al.,* 2018). The main motive for not referring a doctor in the present is the high cost of visiting doctor (72%). All these issues might be due to economic constraint and the dearth of healthcare insurance for the general public which may impulse the public to usage antibiotics previously consulting a healthcare professional (Reynolds et al.; 2009). This will raise the risk of improper diagnosis, uncommon but severe adverse reactions, hazardous drug interactions, an improper manner of administration and improper drug and dose (Islahudin *et al.,* 2014).

Community knowledge and attitude regarding antibiotic usage have a critical impression on treatment outcomes as it is specified by Quick et al. that patients/users interference shows a significant role in dipping the frequency of antibiotic abuse (Quick *et al.,* 1991). Our data recommend that the participants anticipated an antibiotic to be prescribed by their physicians for the common cold and microbial infections. This outcome is analogous to the verdicts of studies conducted in the Saudi Community (Khalil *et al.,* 2017). This designates that the study population attitude was poor towards the correct indication of antibiotics. The reasons for this negative outcome could be attributed to the use of term “germ” throughout endowment of medical advice to the public in its place of utilizing the more precise term “bacteria” or “virus” (Khalil *et al.,* 2017).

In the mentioned study, a significant proportion of participants (16.08%) agreed that they keep antibiotics at home in case of emergency; though, this result is relatively better than the earlier findings that stated a proportion of 25.5% and 43%, correspondingly (Nouf *et al.,* 2017; Khalil *et al.,* 2017). Furthermore, 27.40% respondents were uncertain that if antibiotic resistance is dangerous for the society. On the divergent, the mainstream of respondents (94.97%) granted on the need to enhance antibiotic education among the community.

CONCLUSIONS

The results obtained in this survey revelation that some vital gaps in the attitudes and practices regarding the use of antibiotics in the community. The outcomes underlined on the necessity to advance basic knowledge of antibiotics among Saudi community. Furthermore, regulatory efforts are mandatory to scrutinize the over the counter availability of antibiotics to the general public.

Authors Contributions

Mr. Mohammad Daud Ali contributed to the design of the questionnaire, supervising data analysis process and writing manuscript. The arrangement of the manuscript as per journal demand did by Dr. Ayaz Ahmad. Manuscript reviewed throughout for their rectifying grammar error done by Dr. Yousif Amin Hassan.

Conflict of Interest

All the authors declare that there is no conflict of interest.

Funding

None declared.

Acknowledgements

The authors would like to express thanks to B.Sc pharmacy final year students Mrs. Sara Ahmed Aldookhy & Mrs. Jenan Wasfi Alsheyokh who help in data collection, also the Department of pharmacy, Mohammed AlMana College for Health Sciences for supporting this study.

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