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Public attitude and justification to purchase antibiotics in the Eastern region Al Ahsa of Saudi Arabia

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Abstract   Use of non-prescription antibiotics can portend danger and predispose the populace to changes in bacterial resistance pattern. The aims of this study were to (a) evaluate the knowledge and attitudes of residents of Al-Ahsa community, Saudi Arabia on the use of non-prescribed antibiotics. (b) To identify possible predictors (if any) for self-medication within the community.

A cross-sectional survey study, using self-administered questionnaire was conducted in two sections; demographics and self-medication attitude (in form of self-antibiotic use). Questions contained the following outcomes; for demographics; gender, age, education level and common disease within the community. Whereas the second part evaluated sources of information, knowledge of antibiotics, frequency/duration of use, underlined illness in which drug use was employed, names of antibiotics used and awareness of adverse effects of antibiotics. Results revealed that the adult population in the 18–40 year age range constituted about 82.5% of the respondents. Also 18–29 age group made of 60.5% of the respondents and that 56.8% the respondents are university graduates. Cold (18.8%) and sore throat (13.0%) were the diseases commonly found among the community that drove them to using non-prescribed antibiotics. About 337 (72.8%) of the respondent mention the use of antibiotics to treat the illness, and 21 (4.5%) were aiming to prevent the illness. While, 19.4% of the respondents admitted to taking non-prescribed antibiotics for both prevention and treatment of illness. 43.6% of the respondents disclosed that they are not aware of the dangers of using non-prescribed antibiotics. In conclusion the use of non-prescribed antibiotics in this community is evident, as a significant number use them from previous experience for prevention

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and treatment of illness. Therefore introduction of rational use of drugs will help in limiting the attendant development of bacterial resistance.

1. Introduction

Proper use of antibiotics is critical to guarantee treatment effectiveness and to reduce the chances of resistance. However, irrational use may result in a variety of non-desirable events, and increase the chances of resistance, which can lead to high treatment cost with limited benefits (Calva, 1996; ER, 1997; Lansang et al., 1990; Okeke et al., 1999; Radyowijati and Haak, 2003). One of the main challenges that has emerged over the decades is the non-prescription use of antibiotics (Lansang et al., 1990). This is perhaps the main reason for reduced effect of antibiotics to different types of bacterial infections (Emeka, Al-Omar, & Khan, 2012; Howard et al., 2003). The non-prescription use of antibiotics is often directly associated with the easy access to antibiotics, which creates the opportunity for the consumer to bypass the expert opinion and self-medicate themselves based on their past experience or peer recommendations (Calva, 1996; ER, 1997; Lansang et al., 1990; Oyetunde et al., 2010). Consequences of self-medication have been known to be associated with poor prognosis and safety issues. Adding to this problem is the use of antibiotics through non-prescription purchase, thereby endangering the populace because of a consequent development of bacterial resistance (Byarugaba, 2004; Hart and Kariuki, 1998).

One most important issue in context of self-medication is perhaps the consumers' knowledge toward the antibiotic (Kandakai et al., 1996). Certain projects exploring the public knowledge toward antibiotic use report poor understanding of the public about the antibiotic, and conditions in which antibiotics can be used (Arul Prakasam et al., 2011; Curry et al., 2006). Furthermore, this poor knowledge has not only affected the public understanding for antibiotics, but also developed their own understanding to treat common respiratory tract infections with antibiotics (Chan and Tang, 2006; Curry et al., 2006; Eng et al., 2003). Developed countries have identified this issue earlier and have planned interventions by correcting the misconception with evidence base information (Huttner et al., 2010; McNulty et al., 2007).

However, in developing nations the scenario is perhaps different. Particularly addressing the issue of self-medication in Gulf region, the belief of the inhabitants, knowledge and behavior pertaining to the use of antibiotics need to be documented due to increasing level of resistance. Some of the previous study in Gulf region has expressed serious knowledge deficits about antibiotics among the Arab population (Tenaiji et al., 2008). Ministry of health Saudi Arabia has an approved law since 1978 that forbid pharmacist to dispense without prescription (Bawazir, 1992). However, in these communities regulation and public medication safety is at the back seat for the moment (Emeka et al., 2012; Khan and Ibrahim, 2013). Thus it appears that people buy what they want without being educated about the consequences. This freedom to antibiotic access might put the community at a high risk of potential adverse events that can be associated with a self-directed use

of these drugs. In this regard it is very pertinent to address the factors that drive the behavior to use antibiotics without prescription and how they came to decide that the drug they are choosing best fit their need. The current study is aimed at evaluating public attitude and behavior toward the use of non-prescribed antibiotic in Al Ahsa Eastern Province, Saudi Arabia and to identify possible predictors (if any) for self-medication within the community under study.

2. Methodology

A cross sectional study was conducted in the Al Ahsa Eastern Province, an oil producing region of Saudi Arabia, situated near to the border of neighboring gulf countries like Bahrain, Qatar and United Arab Emirates.

2.1. Sample size

In considering the number of suburbs within this area, four main clusters were identified namely Hofuf, Mubaraz, Mahasen, and Hassa Villages that best reflect the Al Ahsa population. Using the online sample size calculator i.e. RaoSoft®, minimum effective sample 377 was calculated at the confidence interval of 95% (RaoSoft, 2013). The minimum effective sample was calculated just to ensure a minimum number, if approached that justify the findings of the study. In addition, the following inclusion and exclusion criteria were adopted to ensure that the respondent interviewed, best represent the Al Ahsa population.

2.1.1. Inclusion criteria

- Respondents aged eighteen or more were invited for their participation
- The respondent should be an Al Ahsa resident.
- Must be a resident of that area for at least one year.

2.1.2. Exclusion criteria

- Age less than eighteen years.
- Visitors from other regions were excluded.
- Respondents with hearing and speaking disabilities were excluded.
- Respondents with any abnormal behavior or psychiatry complication were also excluded.

2.2. Questionnaire distribution and data collection

A cross-sectional study was designed with semi-structured interview guide that was developed using self-administered questionnaires. The respondents were males and females from

Al-Ahsa, Kingdom of Saudi Arabia. The interviews focused on the issues like demography, level of qualifications, underlined illness, and frequency of antibiotic use, knowledge of use, reason for use, sources and knowledge of adverse effects.

A total of six hundred and seven questionnaires were distributed and based on the respondent convenience and availability for example some took five minutes to complete by

Table 1 Demographic information of respondents.

Demographics	N 463 (%)
Gender	
Male	364 (78.6%)
Female	99 (21.4%)
Age	
18–29	280 (60.5%)
30–39	102 (22.0%)
40–49	62 (13.4%)
50–59	19 (4.1%)
Education level	
No formal education	32 (6.9%)
Primary school	37 (8.0%)
Secondary school	91 (19.7%)
University graduates	263 (56.8%)
Diploma	40 (8.6%)

Table 2 Respondent disease status and use of antibiotics in last 1–2 months.

Variables	N (%)
Respondents' disease	
No disease	189 (40.8%)
Asthma	22 (4.8%)
Sore throat	60 (13.0%)
Cold	87 (18.8%)
Acne	46 (9.9%)
Fever	16 (3.5%)
Miscellaneous	43 (9.3%)
In the last 1–2 months' time how you will rate the use of antibiotics	
Very frequently	341 (73.7%)
Not frequently	119 (25.7%)
Not disclose	3 (0.6%)
How long do normally take these antibiotics	
2 days	110 (23.8%)
5 days	177 (38.2%)
1 week	106 (22.9%)
1 month	26 (5.6%)
Not disclosed	44 (9.5%)
Antibiotic used during last 1–2 months	
Cefazolin	4 (1.7%)
Cefclor	4 (1.7%)
Gatifloxacin	2 (0.9%)
Ofloxacin	2 (0.9%)
Augmentin	35 (15.1%)
Amoxycillin	125 (53.9%)
Ampicillin	10 (4.3%)
Erythromycin	9 (3.9%)
Clathromycine	11 (4.7%)
Azithromycine	12 (5.2%)
Metronidazole	15 (6.5%)
Tetracycline	3 (1.3%)
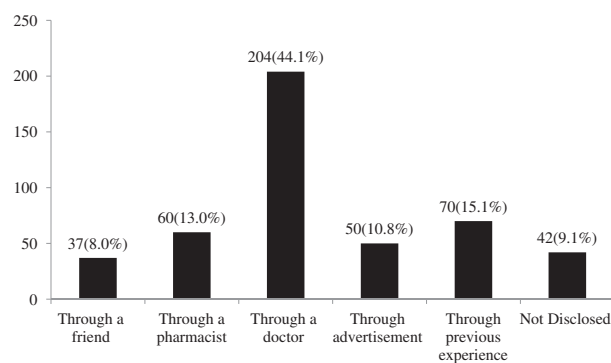
Figure 1 Source of information that may influence the self-directed use of antibiotics.

answering all the questions others took 1–2 h or a day. The duration of questionnaire distribution and data collection was from August 1st 2012 till February 15th 2013.

2.3. Ethical approval and data analysis

The research protocol was approved by the Institutional Review Board, Deanship of scientific research, King Faisal University, Al-Ahsa, Saudi Arabia. In addition, a written consent was also taken from respondents for their participation in this study.

2.4. Statistics and data analysis

Data collected were coded and analyzed using descriptive statistics with Stata®/SE 12 statistical software.

3. Results

Of the six hundred and seven distributed questionnaires, 489 were returned with a response rate of 80.6%. About twenty six questionnaires of those were incomplete, therefore the final number considered for data analysis was $n = 463$. Majority of the respondents 364 (78.6%) were males. Overall, 280 (60.5%) of the respondents were from the age group 18–29 years, of whom 263 (56.8%) had undergraduate education (Table 1).

Analysis of the data revealed that ailments like cold 87 (18.8%), sore throat 60 (13.0%) and acne 46 (9.9%) were the most common causes adduced for the self-directed request for an antibiotic. Among the drugs requested for, amoxicillin

Table 3 Factors that influence the use of antibiotic.

Variable	N (%)
Why do you take antibiotics	
To prevent illness	21 (4.5%)
To treat illness	337 (72.8%)
Or both	90 (19.4%)
Not disclosed	15 (3.2%)
When you feel ill, your self-directed use of antibiotics helps you to get better	
Yes	420 (90.7%)
No	35 (7.6%)
Not disclosed	8 (1.7%)

Table 4 Respondents' attitude toward adverse events and sharing their experiences with friends and family.

	N (%)
Are you aware of dangers of Antibiotics	
Yes	251 (54.2%)
No	202 (43.6%)
Not disclosed	10 (2.2%)
Keeping in view your personal experiences, would you recommend antibiotics to your family and friends	
Yes	265 (57.2%)
No	190 (41.0%)
Not disclosed	8 (1.7%)

125 (53.9%) and augmentin 35 (15.1%) were mostly used by respondents without prescription (Table 2). A significant number of the respondents come to know about these antibiotics through physician 204 (44.1%) followed by previous experiences 70 (15.1%) and pharmacist 60 (13.0%) (Fig. 1). As a reason for self-medication, 337 (72.8%) revealed that they use it to treat illness, and 420 (90.7%) revealed that their self-directed decision helps them to improve (See Table 3).

In a response to a question about the awareness about the consequences of antibiotics without prescription, 251 (54.2%) of the respondents said that they are aware of the adverse effects associated with the use of antibiotics. In addition 265 (57.2%) of the respondents mentioned that they will recommend it further to their friends and family as well (Table 4).

4. Discussion

Saudi Arabia has a well established policy, not to dispense antibiotics without a prescription. However, in spite of a regulation, dispensing without a prescription remained a major challenge within the community under study (Bawazir, 1992; Emeka et al., 2012; Khan and Ibrahim, 2013). In view of this situation, 341 (73.7%) of the respondent in the current study admitted self-medication by direct purchase of antibiotics to treat various conditions they face. This high incidence of self-medication use of antibiotics appears to be high compared to United Arab Emirates (UAE) with 56.3% (Abasaeed et al., 2009). Whereas in Jordan only 23.0% of the study subjects disclosed self-medication with antibiotics according to reports (Al-Azzam et al., 2007).

From the sample distribution of this study, it shows that most of the respondents were from the age group of between 18 and 40 years. Thus it can be said that the self-medication appears to be common among the adult population of this community. These findings are confirming the result of other studies conducted in gulf region reporting the frequent use of antibiotics among adults (Abasaeed et al., 2009). Overall, most of the respondents reported that they have come to know about the antibiotics they purchase from the physician, pharmacist and their past experiences. Previous studies have suggested that increased antibiotic prescription might increase self-medication with antibiotics (Grigoryan et al., 2007; Stratchounski et al., 2003; Väänänen et al., 2006).

In the current sample most have used antibiotics to treat conditions like cold 87 (18.8%), sore throat 60 (13.0%) and acne 46 (9.9%). About 110 (23.8%) disclosed that they have used the antibiotic for 2 days only and 26 (5.6%) have used

it for one month. The short term use poses a potential risk for resistance (Abdalla, 2011) and extended use for one month increases the chances of adverse events. Therefore adverse effects from the use of antibiotics are another concern that requires attention in this area because its cost and consequences remain unknown (Khan, 2013; Khan and Ibrahim, 2013). Consequently resistance to antibiotics in clinical settings is one of the most indispensable consequences of the self-medication (Memish et al., 2004).

In terms of drug use, penicillin was the mostly sort after medication followed by macrolides as was disclosed by respondents. Among the penicillin used, amoxicillin 125 (53.9%) and augmentin 35 (15.1%) were used by the majority of our respondents to treat 337 (72.8%) or prevent 21 (4.5%) illness or infections. In 420 (90.7%) of the cases the respondents get relief from the treatment (Table 3). Perhaps the use of penicillin for the disclosed ailments would give benefit to the user however, reports have shown that there is increased resistance to penicillin and cephalosporin and is one of the major challenges facing the clinical use of these agents since the last two decades (Memish et al., 2004). Remarkably, undue utilization of penicillin and macrolide is also observed in Sudan and other gulf countries like UAE and Jordan (Al-Azzam et al., 2007; Awad et al., 2005; Calva, 1996). It is hard to predict what the reasons for similar antibiotic pattern will be in other communities. However, no doubt, credit goes to non-compliance to the existing dispensing laws (Abasaeed et al., 2009) and the consumers desire to treat themselves without consultations. This could also be due to business oriented attitude by practitioners (Bawazir, 1992).

We can conclude that there is high prevalence of self-directed use of antibiotics in the community under study. The consequence of this could be that infections would be difficult to treat and subsequent intervention will be more expensive and recalcitrant.

Recommendations

The current study has highlighted a very important issue that need immediate attention of the stake holder to prevent the incidence of antibiotic resistance from further rising. Two strategies should be adopted on immediate basis to address this problem. One, there is an immediate need to educate the public about the consequences of self directed use of antibiotic. Print and electronic media can play an effective role in this regard to create awareness among the public about the advantages of seeking a professional consultation before purchasing any drug over the counter. while the second step focus on the legislation bodies to play more effective role in the implementation of dispensing code of conduct over the Saudi community pharmacies.

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