



Research paper

Parental views of antibiotic use in children with upper respiratory tract infections in Dubai

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ABSTRACT

Introduction: Upper respiratory tract infections (URTIs) are mainly caused by viral infection. However, parental attitudes often lead to inappropriate prescription of antibiotics enhancing the development of antibiotic resistance. The aim of the present study was to assess the parents' knowledge, attitudes and practices (KAP) towards the use of antibiotics for childhood URTIs, at Al Jalila Children's Specialty Hospital in Dubai.

Methods: During the study period, 467 parents of young children completed a validated – structured questionnaire. Main outcome measures included: knowledge, attitudes and practices of parents towards antibiotic use for children with upper respiratory tract infections.

Results: Lack of awareness and gaps in common knowledge regarding antibiotics and their use were noted among parents. Although only 10% of respondents believed that antibiotics are devoid from adverse effects, nearly one-third of them (33.6%) believed that a child should be given an antibiotic if it develops a fever regardless of the cause, even though 48.6% they were aware that most URTIs were viral in nature. Parents reported that they administered antibiotics to children without medical advice most of the time for various reasons, including lack of time or money (83.9%), based on a pharmacist's recommendation (68.3%), or using a previously prescribed antibiotic for a similar illness (66.2%).

Conclusion: Overall, this study showed low awareness among parents regarding the use of antibiotics for treating their children's viral infections. Additionally, these results pave the way for further educational interventions to enhance the awareness of parents about antibiotics to reduce their inappropriate use and its consequences.

1. Introduction

Within the past 20 years, there has been a notable increase in the concern about the emergence of resistant bacteria which has been witnessed worldwide [1,2]. This could be due to the tremendous growth in the inappropriate utilization of antibiotics by health care providers as well as the public. One of the most common infections in children and adults are Upper Respiratory Tract Infections (URTIs). Unfortunately, inappropriate prescribing of antimicrobial agents for URTIs despite their viral origin is common as revealed by several studies worldwide [3,4]. In fact, inappropriate prescribing and utilization of antimicrobial agent is an influential factor in enhancing the development of antibiotic resistant strains and increasing health care costs [5,6]. Therefore, governmental and regulatory agencies are strongly advised to control the prescription and utilization of antimicrobial agents by physicians and the general public.

Researchers investigating the patterns of antibiotic misuse and

abuse in community pharmacies or in the home, have shown a high frequency of unacceptable patterns of dispensing antibiotics without prescription from pharmacies (46%) [7,8]. Moreover, these antibiotics were dispensed according to patients' preferences or pharmacists' recommendations. Additionally, nearly the use of nearly one-third of the antibiotics prescribed over the counter were considered inappropriate [8].

Hence, it is not surprising that inappropriate use of antibiotics is expected amongst parents of children with URTI. It has been reported that there was an association between several factors and the parents' knowledge, attitude, and practice (KAP) towards using antibiotics including but not limited to the number of children, the age of parents or income [9].

According to the World Health Organization (WHO) reports, evidence recognizes the significance of active engagement of patients in decision-making regarding the management options of their diseases in order to gain appropriate therapeutic and economic outcomes.

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Interventions to improve patient engagement in decision-making could be obtained through improving health knowledge, and empowering patients to manage their illness [10]. Such interventions focus primarily on improving patients' health literacy particularly regarding their illness and treatment options due to the pivotal role of the knowledge in framing patients' attitudes towards their treatment. Despite the availability of and accessibility to enormous information through internet, it is not always accurate. Thus, extra task from health care professionals should be created to assess, refine, and correct the parents and patients knowledge to assure proper use of antibiotics. Researchers found that antibiotic self-medication is a relatively frequent problem in Abu Dhabi. Interventions are required in order to reduce the frequency of antibiotic misuse [11]. To our knowledge, this is the first cross sectional survey that aims to understand the KAP of parents in Dubai towards antibiotics given to their children when suffering from URTIs.

2. Methodology

2.1. Recruitment site and participants

The present cross-sectional design study was conducted in an attempt to explore KAP of parents and the use of antibiotics for their children experiencing URTIs. This study was carried out in Dubai between September 2017 and February 2018 at Al Jalila Children's Specialty Hospital. The visitors of AJCH, whether Emirati citizens or Expatriates, (around 500 participants) were invited to participate voluntarily in the study. In order to obtain an unbiased sample of population, participants were randomly selected, using cross-sectional design. To increase compliance, all participants were personally informed about the importance of the study and the importance of their cooperation. The study's protocol was approved by the hospital's institutional review board and was granted ethical approval.

2.2. Data instrument

A self-administered Arabic version questionnaire was distributed to parents to assess their knowledge of using antibiotics for their children infected with URTI [12]. The study questionnaire developed by the research team had four sections as follows:

- (i) The first section was designed to gather sociodemographic information about respondents.
- (ii) The second section aimed to assess parents' knowledge of URTIs and their antibiotics.
- (iii) The third section had statements and questions to assess the parents' attitudes related to this issue.
- (iv) The last section had statements and questions to assess the parents' practices related to this issue.

2.3. Statistical analysis

The minimum required sample size was calculated to be 385 utilizing the Raosoft sample size calculator. The calculations were made assuming an unlimited population size, a 95% confidence interval and 5% error margin and a 50% chance of agreeing to take part in the study. All responses were coded and analyzed using statistical package for social science (SPSS) version 25 (IBM Corp, New York, USA). Descriptive analyses were used where appropriate using frequencies of the variables.

3. Results

3.1. Socio-demographic profile

Questionnaires were distributed to 500 parents in Dubai at Al Jalila Children's Specialty Hospital, out of which 467 were completed and

Table 1
Demographic profile of respondents (n = 467).

Characteristic	Number of Respondents (%)
Gender	
Female	307 (65.7)
Male	160 (34.3)
Mean number of children	3.1 (SD = 1.54)
Number of children ≤ 3	298 (63.8)
Number of children >	169 (36.2)
Insured	398 (85.2%)
Not insured	69 (14.8)
Age groups	
< 35	249 (53.3)
≥ 35	218 (46.7)
Access to health care system* (medium-very good)	145 (31.0%)
Nationality	
Local Emirates	324 (69.0%)
Expatriate	143 (31.0)
Family income*	
High	35 (7.6%)
Moderate	347 (74.2%)
Low	85 (18.2)
Father's education status (School graduate)	194 (41.5%)
(College or University)	273 (58.5%)
Mother's education status	
(School graduate)	159 (34.1%)
(College or University)	308 (65.9%)
Having a child that suffered from URTIs	203 (43.4%)

* Self-assessment as perceived by the parents at the time of the survey.

collected, representing a response rate of 93.4%. Almost two thirds of respondents were female (307; 65.7%), the majority of them aged between 25–44 years old (378; 80.9%), and were insured (397; 85.0%). The Emirati citizens were almost two thirds of respondents (319; 68.3%) whereas the expatriates were almost one third only, Indian, Pakistani and Jordanian are the most amongst them. Moreover; three quarters of the participants have moderate income (343; 73.4%). The demographic profile of the study population is presented in Table 1.

3.2. Knowledge

Parents were asked about the sources of information they had accessed about antibiotic use. Most participants reported that they had received the information from their pediatricians (396; 84.8%), followed the family advice (59; 12.6%) or friends (46; 9.9%). Radio, television and newsletters were the least used as a source of information (< 8%). The parents were given a list of medications including antibiotics, antipyretics, analgesics, and bronchodilators, and were asked to select the antibiotics from the list. For each medication-except for Augmentin- at least half of the respondents chose the incorrect answer (Fig. 1). More than one-fifth of the respondents appeared less certain

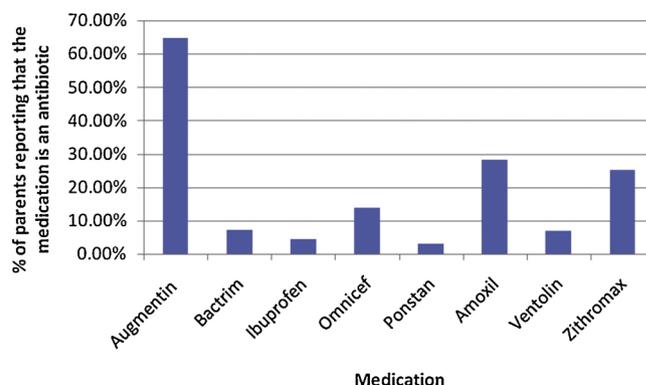


Fig. 1. Ability of parents to recognize antibiotics portrayed as the percentage of respondents reporting that each of the above medications is an antibiotic.

Table 2
Parents' knowledge regarding the appropriate use of antibiotics (n = 467).

	Strongly agree/ agree	Neither agree nor disagree	Strongly disagree/ disagree
Once your child develops fever, you should give him/ her antibiotics regardless the cause	N (%) 157 (33.6%)	N (%) 62 (13.3%)	N (%) 248 (53.1%)
Since upper respiratory tract infections such as flu, common cold, ear infections and sore throat are usually of a viral cause, antibiotics should not be used to cure them.	227 (48.6%)	145 (31.0%)	95(20.3%)
A child with a cold or a flu will improve quickly if it receives regular antibiotic doses	119 (25.4%)	124 (26.6%)	224 (48.0%)
Novel antibiotics can be always produced by scientists to eradicate resistant bacteria	222 (47.6%)	165 (35.3%)	80 (17.1%)
Antibiotics do not cause adverse events	47 (10.0%)	99 (21.2%)	321 (68.8%)
If antibiotics are given for no reason its effect will decrease and bacteria become resistant.	263 (56.4%)	124 (26.6%)	80 (17.1%)
Complications of upper respiratory tract infections could be minimized by giving the antibiotics	176 (37.7%)	204 (43.6%)	87 (18.7%)

about the possibility of occurrence of side effects as a result of antibiotic use (99, 21.2%), while almost one-quarter of the respondents wrongly believed that their children with a flu or cold could improve quickly if they were given regular antibiotic doses (119, 25.4%). Nearly one-third (157, 33.6%) believed that their child ought to be given an antibiotic once he/she developed a fever. On the other hand, a total of 263 respondents (56.4%) were aware that inappropriate use of antibiotics will lead to an increase in bacterial resistance. Table 2 presents the responses to the second section questions.

3.3. Attitude

According to the answers, the majority of the participants reported that they sought a pediatrician’s opinion once their child developed URTI symptoms. The most common symptoms leading to a visit to the pediatrician are fever (76.0%), ear pain (58.5%), sore throat (48.6%), change in behavior (35.1%), and cough (27.4%). Whereas less than one-quarter of parents do so in the case of hoarseness (22.1%) or nose drainage (16.5%). When parents were asked to select the possible treatment options, almost half of them chose analgesics or antibiotics as a possible therapy most of the time (52.0%, 38.1% respectively). The results of the present study showed that nose drainage, cold, or cough were the most common symptoms for which antibiotics would be most of the time prescribed as expected by the participants (87.3%, 87.0%, 80.7% respectively), vomiting, sore throat, fever, or ear pain were less common (56%–67%). Some participants claimed that they administered antibiotics to their children without consulting a physician. A detailed frequency analysis of antibiotic self-administration by parents stratified by etiology is presented in Fig. 2.

Table 3 indicates the percentages (76.2%, 65.7%, and 64.2% respectively) of strong agreement upon the following three statements in

particular: “I think I’m more concerned about my child health than other parents are”, “In your opinion, if your pediatrician does not often prescribe your child an antibiotics, will you change him/her?” and “If your child shows the same symptoms of a previous illness, will you use the same antibiotic used that illness?”.

3.4. Practice

The majority of the participants claimed that pediatricians most of the time prescribed antibiotics by phone (95.2%), and parents urge them most of the time to prescribe antibiotics even when the diagnosis was not confirmed (93.4%). Moreover, parents directly asked directly the pediatricians to prescribe antibiotics for their children as they strongly wanted them to receive them (90.8%), and 88.4% of them thought that their pediatricians prescribed their children antibiotics only because they asked him or her to do so. Interestingly, more than half of the respondents (54.6%) asked the pediatricians most of the time when he/she prescribed an antibiotic if it was actually necessary. Nonetheless, almost half of the participants had rarely followed pediatricians’ instructions and advice (48.0%) or their pediatricians rarely explained to them if their children’s conditions required antibiotics (30.4%) (Table 4).

4. Discussion

Given the growing concern about the inappropriate use of antibiotics and antimicrobial resistance, it is crucial that parents’ obtain good knowledge about, proper attitudes and practice in the use of antibiotics. This study is the first of its kind in Dubai to explore the pattern of inappropriate use of antibiotics by parents when their children suffer from URTIs. In line with data from Palestine [13, this study had a high

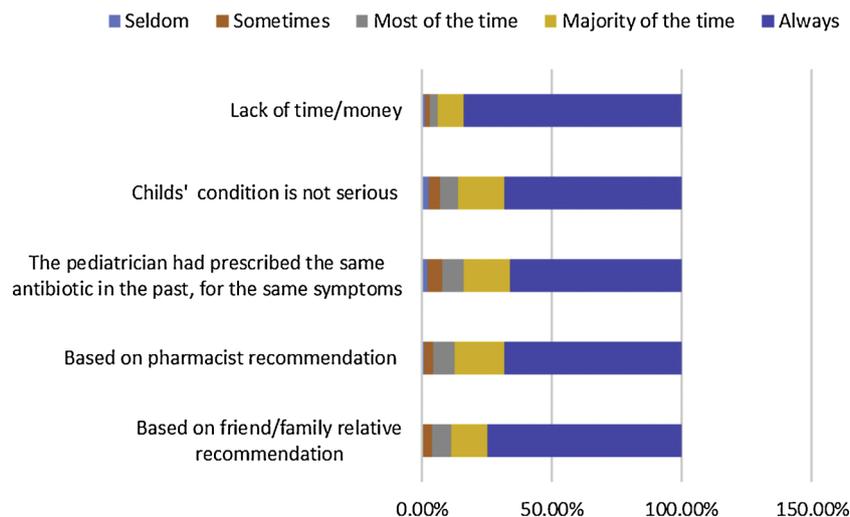


Fig. 2. Frequency analysis of antibiotics self-administration by parents stratified by aetiology.

Table 3
Summary of responses about parents' attitudes regarding antibiotics (n = 467).

	Strongly agree/ agree	Neither agree nor disagree	Strongly disagree/ disagree
	N (%)	N (%)	N (%)
Do you believe that antibiotics are used excessively?	200 (42.8%)	101 (21.6%)	166 (35.5%)
If, based on your opinion, your pediatrician does not prescribe your child antibiotics often enough, would you change him/her?	307 (65.7%)	97 (20.8%)	63 (13.5%)
If, based on your opinion, your pediatriciansprescribes your child antibiotics very often, would you change him/her?	129 (27.6%)	85 (18.2%)	253 (53.8%)
If your child presents with the same symptoms of a previous illness, would you use the antibiotic used by your child during that illness?	299 (64.2%)	96 (20.6%)	72 (15.4%)
I think that both pediatricians and parents should receive information regarding proper use of antibiotics	249 (53.3%)	86 (18.4%)	132 (28.3%)
If your child suffers from recurrent upper respiratory tract infections, would you pressure your pediatrician for prescribing an antibiotic?	232 (49.7%)	100 (21.4%)	135 (28.9%)
When your child has only nose drainage, would you take it to the pediatrician?	161 (34.5%)	68 (14.5%)	238 (51.0%)
I think I'm more concerned about my child health more than other parents do for theirs	356 (76.2%)	54 (11.5%)	57 (12.2%)
In order to avoid any complications of my child's infection, I would visit the pediatrician	189 (40.5%)	138 (29.6%)	140 (29.9%)

parent response rate (93.4%). This response rate was higher than that reported in Jordan and Cyprus (72.3%; 69.3% respectively) [9,14]. The study has revealed that the majority of parents claimed that the main source of getting information about antibiotics was their physicians (> 80%). Also it showed that a significant proportion of them were incredulous about their pediatricians' practice in regard to antibiotic prescription. Two-thirds of them (65.7%) indicated that they would change their pediatrician particularly if he/she under -prescribed antibiotics. This result agrees with data from Jordan [9], but disagrees with Panagakou's and his colleagues who concluded that Greek parents would not usually change their pediatricians for such a reason [15].

Many participants in the present study, as in other studies [12,13], have misconceptions or inadequate overall knowledge regarding the antibiotics and their appropriate use. Almost one third of parents in the present study agree that antibiotics are required once a child develops fever (33.6%). Furthermore, 37.7% of them believe that antibiotics will decrease complications of URTIs. This belief is reflected in the parents' attitudes as their antibiotic expectations for certain URTIs were high. Additionally, respondents admit that they administer antibiotics to their children, even without medical advice. On the other hand, nearly half (48.6%) of the parents are aware that URTIs are usually of viral origin and do not require antibiotic therapy. The findings show a few number of parents believe that antibiotics are devoid from side effects (10.0%). Thus, even if URTIs are of viral origin, and antibiotics are not free from side effects, almost one third of them believe that antibiotics should be administered to a child if they develop a fever.

Similar to other studies, half of the participants in the present study (56.4%) agree that one of the main leading causes of developing bacterial resistance is the inappropriate use of antibiotics [13]. However; nearly half of the participants (47.6%) also think that researchers are always able to invent effective antibiotics for resistant bacteria. This may explain their tendency to use antibiotics inappropriately.

According to the participants in the present study, the most common

symptom leading to visits to pediatricians is fever although it is not the main reason. Similar results have been reported by other researchers [12,13]. Whereas, in Greece, the majority of respondents (95.0%) claim that such visits are driven by a runny nose accompanied by other symptoms [15].

The prevalence of administrating antibiotics without prescription was high. The parents in the present study report that their children are usually given antibiotics without referring to their pediatrician most of the time including- having no time or money (83.9%), family or friends advice (74.7%), the mild symptoms of the disease (68.5%), pharmacists' recommendation (68.3%), or the same symptoms of a previous illness for which a pediatrician has prescribed an antibiotic (66.2%). Similar to other developing countries, the results of the present study in this regard are not surprising [9]. Parents can obtain antibiotics directly from the pharmacies based on their own knowledge or based on the pharmacists' advice without the need for a prescription despite being an illegal action. On the contrary, results obtained from the Cyprus studies show that only a small number of patients or parents claim that they administer antibiotics to themselves or to their children without physician recommendation. This could be as a result of implementing strict regulations to control antibiotics dispensing from pharmacies in the country [14,15]. Therefore, applying strict regulations to antibiotic dispensing parallel to conducting educational programs for both parents and health care practitioners is essential and could limit the phenomenon of self-medication and its undesirable consequences.

Doctor's decision to prescribe drugs including antibiotics could be influenced by patients. For example, the findings of a large-scale survey which included one thousand general practitioners from the United Kingdom showed that almost half of physicians (55%) would prescribe an antibiotic although they were not sure about the medical need of it due to the parental pressure. Moreover, 44% of them declared that they prescribed an antibiotic only to get the patient to leave [16]. Similar finding has been reported in the present study. Based on the parents'

Table 4
Summary of responses about parents' practice regarding antibiotics (n = 467).

	Most of the time/always	Sometimes	Seldom
	N (%)	N (%)	N (%)
I pay attention to the possible adverse events of antibiotics	188 (40.3%)	219 (46.9%)	60 (12.8%)
I will ask the pediatrician when he/she prescribe antibiotic for my child if it is actually indicated	255 (54.6%)	67 (14.3%)	145 (31.1%)
I will express approval for my pediatrician if he/she prefers not to prescribe antibiotics	396 (84.8%)	39 (8.4%)	32 (6.8%)
I will express approval for my pediatrician if he/she prefers not to prescribe antibiotics pediatrician prescribes antibiotics by phone	445 (95.2%)	14 (3.0%)	8 (1.8%)
I will ask the pediatrician to prescribe antibiotic when I wish to give it to my child	424 (90.8%)	29 (6.2%)	14 (3.0%)
I follow the pediatrician's instructions	149 (31.9%)	94 (20.1%)	224 (48.0%)
I will urge the pediatrician to prescribe antibiotic even in case of unconfirmed diagnosis	436 (93.4%)	17 (3.6%)	14 (3.0%)
The pediatrician explains to me the condition of my child and if he/she is in a need of antibiotic or not	214 (45.8%)	111 (23.8%)	142 (30.4%)
The pediatricians prescribes antibiotic only because I ask him	413 (88.4%)	31 (6.6%)	23 (4.9%)

responses and not on the pediatricians' opinions, it seems that the parental pressure on the physicians is one of the leading causes of prescribing antibiotics because the majority of respondents (88.4%) think that their pediatrician prescribe them antibiotics only because they have asked them to do so.

5. Strengths and limitations

Several strengths and limitations in the present study are acknowledged. Strengths of this study are due to the fact that it is the first study, up to the researchers' knowledge, to assess parents' KAP towards antibiotics use for children with URTIs at Al Jalila Children's Specialty Hospital in Dubai. This study will support the policy makers and health authorities in Dubai to offer the necessary training to ensure appropriate use of antibiotics by parents for their children with URTIs. The high response rate is another strength. However, the generalizability of the findings is limited by the fact that the results were obtained from parents at one hospital only. In addition, some other factors could also have affected the results of this study in some ways. The population of the study may not represent the real population, and the study results may not reflect the real practice as it is also a survey and practice is not observed.

6. Conclusion

In spite of this study's limitations, the findings of this study show that there is a lack of adequate parental knowledge about the use and misuse of antibiotics for their infected children. Hence, the results obtained herein will be a cornerstone for designing and conducting a national public campaign addressing raising parents' awareness and knowledge of the study issue and will in turn help them to differentiate between bacterial and viral infections and the ineffectiveness of treating viral infections with antibiotics.

Author contributions

All contributed significantly in the study design, analysis, interpretation and discussion of the results.

SS and WA collected the data

Declaration

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Ethical approval

Ethical approval was obtained from the Institutional Review Board

at the Al Jalila Children's Specialty Hospital.

Conflict of interest

The authors declare that they have no conflict of interest to declare

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