Parental knowledge, attitudes and antibiotic use for acute upper respiratory tract infection in children attending a primary healthcare clinic in Malaysia

Chan G C, Tang S F

ABSTRACT

Introduction: A study was carried out in a primary healthcare clinic in the Hulu Langat district of Malaysia to assess the parental knowledge, attitudes and antibiotic use for common childhood acute upper respiratory tract infection (URTI).

Methods: A cross-sectional study involving 421 parents, who were surveyed by using an interviewer-administered questionnaire, from April to June 2001.

Results: Approximately 59 percent of parents from this study believed that weather was the main cause of acute URTI of their children, 13 percent thought it was due to food, and only about 27 percent said it was caused by germs. Nearly 68 percent, 69 percent and 76 percent of them believed that antibiotics was helpful in treating the common cold, cough and fever, respectively. 29 percent of parents who thought that their child with acute URTI needed antibiotics were not prescribed with any. On the other hand, 17 percent believed that antibiotics were unnecessary when prescribed. 28 percent of parents had requested for antibiotics, and 93 percent received what they requested for their child with acute URTI. About 31 percent of parents who did not request any antibiotics claimed that private general practitioners habitually prescribed antibiotics. The antibiotic compliance was poor with only 74 percent completing the entire course, with 85 percent of them stopping once they improved symptomatically. 15 percent of parents gave "leftover" antibiotics, 24 percent gave "shared" antibiotics, and 5.5 percent bought antibiotics for their child with acute URTI without consulting a doctor.

Conclusion: This study shows that parents often have inadequate knowledge and misconceptions on antibiotic use for acute URTI in children. Improved parental education may reduce unnecessary antibiotic prescription and antimicrobial resistance in the community.

Keywords: antibiotics, children, parental attitude, parental knowledge, upper respiratory tract infections

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Peringgit Community Polyclinic
Jalan Pantai Peringgit
Melaka 75450
Malaysia

Chan G C, MD, MMed
Family Medicine Specialist

Department of Paediatrics
Universiti Kebangsaan Malaysia
Jalan Yaacob Latiff
Kuala Lumpur 56000
Malaysia

Tang S F, MD, MMed, MRCP
Associate Professor

Correspondence to:
Dr Giin-Cherng Chan
Klinik Cheng
20 Jalan CB-1
Taman Cheng Baru
Melaka 75250, Malaysia
Tel: (60) 6 312 1333
Fax: (60) 6 312 1333
Email: dr_changc@yahoo.com

INTRODUCTION

Most children have about four to six acute respiratory tract infections each year[1] and they account for a substantial proportion of consultations to primary care physicians. The second National Health and Morbidity Survey (1996) reported a prevalence rate of 39.3% for acute respiratory tract infections among children less than five years old[2]. Despite the predominantly viral cause[3], antibiotics are frequently prescribed to children with symptoms of acute upper respiratory tract infection (URTI). A survey in the United States reviewed that antibiotics were prescribed to 44% of patients with the common cold, 46% with upper respiratory tract infections and 75% with bronchitis. Children aged 0 to four years received 53% of all antibiotics prescribed to the paediatric population[4].

Clinically and economically, inappropriate use of antibiotics for acute URTI is a major worldwide problem, including in Malaysia, which has received comparatively little attention. The consequences include preventable mortality and morbidity from treatment failure, unnecessary adverse effects of the antibiotics, waste of healthcare resources and an increased emergence of bacterial resistance. A recent Cochrane review of antibiotic use for the common cold concluded that there was not enough evidence of important benefits from the treatment of URTI, and there was a significant increase in adverse effects associated with antibiotic use[5].

Despite the lack of evidence that antibiotics improve outcomes in acute URTI, children receive a significant proportion of antibiotics prescribed each

Table I. Demographical characteristics of parents (n=421).

Characteristic	Malay n	Chinese n	Indian n	Total n (%)
Sex				
Mother	173	118	45	336 (79.8)
Father	42	28	15	85 (20.2)
Age (in years)				
15-19	0	1	0	1 (0.2)
20-24	18	8	8	34 (8.1)
25-29	42	28	18	88 (20.9)
30-34	69	55	14	138 (32.8)
35-39	55	28	16	99 (23.5)
40-44	26	20	3	49 (11.6)
45-49	4	4	1	9 (2.1)
50-54	1	2	0	3 (0.7)
Educational level				
Primary	19	28	9	56 (13.3)
Secondary	168	107	47	322 (76.5)
College/Tertiary	28	11	4	43 (10.2)
Monthly income (RM)				
400-699	6	0	3	9 (2.1)
700-999	35	1	9	45 (10.7)
1000-1999	89	46	30	165 (39.2)
2000-2999	52	56	11	119 (28.3)
3000-3999	22	28	4	54 (12.8)
4000-4999	8	11	1	20 (4.8)
5000 & above	3	4	2	9 (2.1)
Total	215	146	60	421 (100.0)

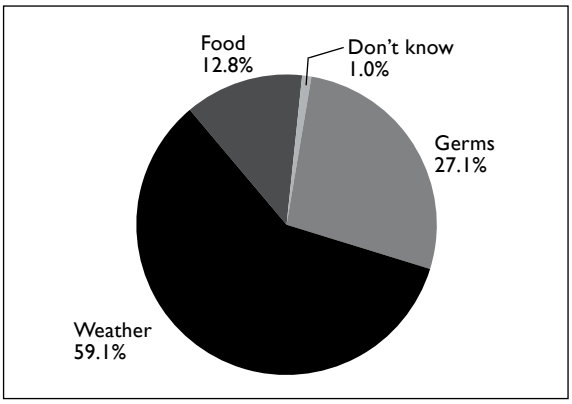

Fig. 1 Parents' understanding of causes of acute URTI (n=421).

year. One possible reason for physicians to prescribe antibiotics for viral URTI is to meet patients' expectations for such forms of treatment[6-9]. Thus, the current parental knowledge, attitude and practice on antibiotic use in common childhood URTI is a matter of great interest and importance, and these are the objectives and issues addressed in this study.

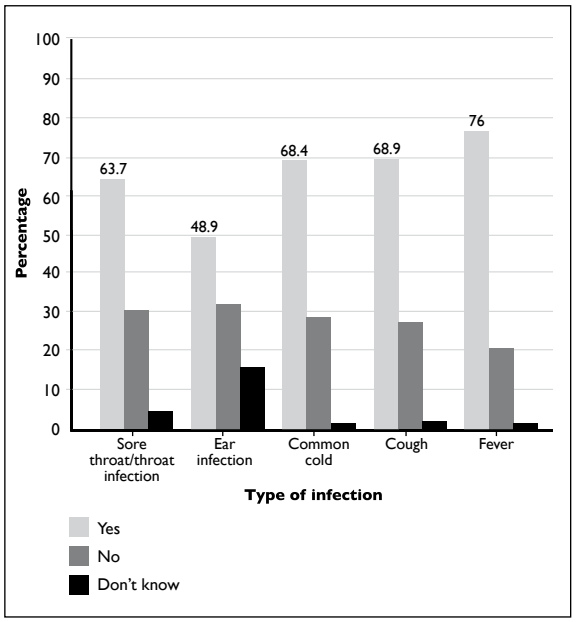

Fig. 2 Parental knowledge of antibiotic indication (n=421).

METHODS

This was a cross-sectional study using a pre-tested interviewer-administered questionnaire, carried out in the outpatient clinic at Batu 9 primary healthcare clinic from April 1, 2001 to June 30, 2001. Batu 9 primary healthcare clinic is a government primary healthcare facility that is located in Cheras Mukim of Hulu Langat district, Malaysia. This study involved universal sampling of parents who brought their children to the outpatient clinic and they should be Malaysian citizens; either mother or father from the particular family with children aged less than 12 years with symptoms of acute URTI, i.e. fever, cough, sore throat, runny nose and ear problems. Parents with children with symptoms of lower respiratory tract problems such as wheezing, stridor and breathing difficulty were excluded.

Written informed consent was obtained from parents before carrying out the interview study. After the interview, the author proceeded to ask further relevant history and examine the child; and prescribed necessary medicine, gave advice, educated and explained to the parents regarding antibiotic use in acute URTI. A 31-question pretested and validated questionnaire was developed to conduct this study. The questions were related to parental demographical information and about their experiences with antibiotics. Most questions were "Yes/No" or Likert scale in type. Open-ended questions were also included. Statistical Package for Social Sciences (SPSS) version 10.0 (Chicago, IL, USA) was used

to analyse data from the questionnaire. The statistical tests involved here were One-way analysis of variance (ANOVA), Pearson correlation test and chi-square test.

RESULTS

A total of 421 parents from various ethnicities were enrolled in this study. No parent refused to take part in this questionnaire study. The Malay ethnic group formed over half of the respondents i.e. 215 (51.1%), and the Chinese and Indian ethnic groups contributed 146 (34.7%) and 60 (14.2%) respondents, respectively. The majority of the respondents were mothers i.e. 336 (79.8%). The mean age were 33.3 years, 33.5 years and 31.2 years for Malay, Chinese and Indian parents, respectively. Malay parents in this study were better educated as about 91% of them had at least secondary education. The Chinese parents in this study had higher monthly household income as the mean monthly household income were RM 2,282.19, RM 1,744.07, and RM 1,635.00 for the Chinese, Malay and Indian parents, respectively (Table I).

About 59% of parents from this study believed that weather change was the main cause of acute URTI of their children, 13% thought that URTI was caused by ingestion of certain foods. Only 27% answered that acute URTI was caused by germs. One percent of the parents did not know what caused acute URTI (Fig. 1). In assessing parental knowledge of antibiotics, 76% and 69% of the total parents were found to believe that antibiotics were needed for fever and cough symptoms, respectively, in a child with acute URTI. 68% and 64% of them thought antibiotics were necessary for the common cold and sore throat, respectively. However, only about 49% of the parents thought that antibiotics were needed in ear infection in their children (Fig. 2).

29% of parents believed that antibiotics were needed for their children with URTI but these were not prescribed by the doctor they visited. There was no statistically significant difference between ethnic groups, educational levels and monthly household income for this attitude ($p>0.05$). About 17% of parents who brought their children for URTI felt that antibiotics were not necessary when the doctor prescribed these. There was no statistically significant difference between ethnic groups and monthly household incomes for this attitude ($p>0.05$) but there was a statistically significant difference between educational levels for this attitude ($p<0.05$).

Almost 28% of parents admitted to having directly asked a doctor to prescribe antibiotics. Of those who did not request for antibiotics, 31.3% said the doctor always gave antibiotics for URTI, especially private general practitioners, and the rest followed the doctor's decision. Of those who had requested antibiotics, 93.2% received the antibiotics they requested. 17% of parents had asked for a specific type of antibiotics. There was no significant difference statistically between ethnic groups, educational level and monthly income for this attitude ($p>0.05$).

26% of parents admitted that their child did not finish the entire course of antibiotics given. There was no statistically significant difference between ethnic groups, educational level and monthly income for this attitude ($p>0.05$). From those who did not complete an entire course of antibiotics, 85% of the parents stopped giving antibiotics once their child improved symptomatically. 14% stopped giving antibiotics because their child refused to take it. Only 1% had to stop the antibiotic due to drug side effects of the antibiotics. About 15% of parents gave their child "leftover" antibiotics that they had saved from a previous visit. 24% of parents had the experience of giving their child "shared" antibiotics prescribed previously for a child with similar symptoms of URTI. 5% of parents bought antibiotics from a general practitioner's clinic without seeing the doctor. There was no significant difference statistically between ethnic groups, educational levels and monthly incomes for the above attitudes ($p>0.05$).

DISCUSSION

It is not uncommon that many parents believe weather change to be the main cause of URTI. Many think their children are more vulnerable to URTI, especially after being exposed to colder weather or the rainy season. This health belief may derive from their past experience or cultural belief. In fact, a prospective cohort study by Erling et al showed that low monthly average minimum day temperature was associated with high prevalence of URTI in a developing society[10]. In view of the association between acute URTI and weather change, it is not surprising that parents have the misconception of weather change as the main causative agent of acute URTI, instead of germs.

In addition, in the Chinese traditional culture, health is thought to be maintained by balancing a number of factors, including the concept of "hot" and "cooling" food; they believe that an individual

suffering from an ear infection (thought to be a "hot" disease) should avoid scrambled eggs, a "hot" food, because a "hot" illness needs to be treated with "cold" foods, such as winter melon[11]. Traditional Malay medicine is based on the concept that illnesses are the consequence of physical as well as supernatural causes. Thus, the traditional Malay believes that certain foods cause illness. Cassava is reputed to contain "wind" and thus to cause body parts to swell and many fruits are believed to be "cold" and to cause abdominal colic[11]. Unfortunately, little is known of traditional Indian beliefs as few studies have been carried out[12].

In this study, almost 29% of parents felt that their child with an acute URTI needed antibiotics, which was not prescribed by the doctor. There is a widespread perception that for every symptom, there is a specific remedy or drug, and antibiotics are viewed as wonder drugs capable of healing a wide variety of illnesses ranging from gastrointestinal disorders to headaches[13]. Parents may feel that antibiotics could help ease their anxiety and worry if it is given to their sick child. In addition, they do not need to come back again to ask for an antibiotic after one to two days of "poor improvement" of the illness.

Unrealistic parental expectations had been shown to contribute to physicians' inappropriate prescribing of antibiotics in a recent focus group discussion study by Barden et al[14]. Smith et al[15] have also shown that physicians' perceptions of parental expectations for antibiotics were actually the only significant predictor of prescribing antibiotics for conditions of presumed viral aetiology. In another study, 58% of physicians reported that their decision to provide antibiotics for nonspecific URTI was affected by parental pressure and 49% were influenced by parents specifically asking for therapy for a nonspecific URTI, i.e. the common cold[16]. Hong et al[17] noted that patients' lack of knowledge and past experience contributed to increased demand and expectations for antibiotics. Many patients have received antibiotics for viral upper respiratory illnesses that were generally self-limiting, and these treatments were perceived as effective due to previous "success" with antibiotics.

On the other hand, 17% of the parents in this study believed that antibiotics were unnecessary when prescribed, compared to previous studies such as Palmer et al (9%)[7] and Collett et al (6%)[8]. This attitude was found to have significant association with educational levels. This group of parents may understand more about the proper indication for antibiotics and they may be aware of the undesirable effects of over prescription of antibiotics, therefore making them reluctant to receive antibiotics for acute URTI in their children. Some parents in fact do not primarily seek a prescription for antibiotics but actually seek guidance, evaluation and reassurance when they take their child with upper respiratory tract symptoms to a physician[14,18]. More importantly, it has been found that patients' satisfaction is not correlated with receipt of antibiotics but with time spent by the physicians[19], good doctor-patient communication[16] and parents' subsequent understanding of treatment[19].

Why then do some physicians still prescribe an antibiotic for URTI though some parents feel that it is not necessary? This could be partly contributed by physicians' behaviours and their prescribing practices. In a study by Watson et al[16] in evaluating actual practice of physicians, it was noted that physicians recognised the problem of antibiotic resistance but their reported practices were not in line with recently published recommendations for most paediatric URTI[20-24]. Besides this, cultural norms can affect the openness of communication. This can be seen in many developing countries, where patterned deference toward physicians is considered appropriate and desirable behaviour, thus the patient accepts whatever prescription and treatment is given by physicians[13].

Poor adherence to medication in this study may be due to parents not being informed or instructed properly on the importance of completion of an antibiotic. In addition, not completing a full course of antibiotics may be derived from a cultural belief that drug use should be stopped when symptoms subside[8]. In traditional Chinese culture, taking medication is thought to be aversive, hence medications tend to be taken only until symptoms are relieved and then discontinued; if symptoms are not obvious, medications will probably never be taken[25]. Apart from parental cultural beliefs, minor side effects of certain antibiotics such as stomach upset may contribute to the poor adherence of medication.

The use of "leftover", "shared" antibiotics and over-the-counter purchase of antibiotics by parents are common situations in the community. They think that their children suffer from the same illnesses judging by the similar symptoms, so they would give the "leftover" or "shared" antibiotics to their children and only bring them

to their doctors if there is no improvement. The not-so-strict enforcement of medical laws and regulations in Malaysia enable clinic dispensers and pharmacists to sell the antibiotics to the people over-the-counter without a doctor's prescription. Moreover, transactions take considerably less time than those in government health clinics and hospitals, thus many parents like to purchase antibiotics without consultation from a doctor. Lastly, these attitudes were also due to lack of knowledge and awareness of the parents of the unnecessary undesirable effects and outcomes to the children as well as increasing bacterial resistance.

There are limitations in this study. This study may be representing the suburban population but may not necessarily represent the population in a more rural area or more affluent section of the population of Malaysia. As with studies of this nature, this study relied on self-reporting. It is not known how accurately parents recall actual experience with URTI and antibiotics, and parental reports of their behaviour may not always correspond to their actual behaviour. Besides this, invalid answers may be due to other factors such as interviewer bias. Some parents may not have answered the questionnaire correctly and truthfully. This could have been because they were in a hurry to go home and the sick child they brought for consultation may have been interrupting the interview.

In conclusion, this study has documented many areas in which parental knowledge on antibiotic use for acute URTI is considerably lacking, resulting in some inappropriate attitudes and practices. It is hoped that by identifying weak areas in parents' knowledge and attitude, better planned educational and behavioural modification efforts can be made to reduce unnecessary prescription of antibiotics and curtail the still burgeoning problem of bacterial resistance in children specifically and in the community at large. These include parental educational interventions, strict enforcement of over-the-counter sale of antibiotics and lastly, it is essential to establish evidence-based clinical practice guidelines of acute URTI for doctors with regular medical audit of treatment for acute URTI to ensure that patients receive the best quality of care.

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