

Fever Phobia in a Primary Healthcare Setting: A Singapore Perspective

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Introduction

Fever in children is a commonly seen problem in the primary healthcare setting but one which often alarms parents.¹ Fever phobia can lead to potentially aggressive and inappropriate management of a febrile child.²⁻⁴ Our study seeks to examine the prevalence of fever phobia defined as worries regarding fever, amongst parents visiting the polyclinic as well as their ways of monitoring temperature, past experiences with healthcare practices, traditional practices as well as resources for fever management in children.

Materials and methods

Using a standard questionnaire, modified from that used by Crocetti et al,⁴ a cross-sectional survey of 557 consecutive parents was conducted at the Ang Mo Kio Polyclinic in May 2002. The inclusion criteria included parents of children between 3 months old and 5 years old who were brought to the polyclinic for a well- or sick-visit. A well visit was defined as health maintenance visits for purposes such as immunisation or developmental assessment. A sick visit was defined as acute and follow-up visits for management of medical conditions such as upper respiratory tract infections and gastroenteritis. The questions elicited information including the following: the definition of fever, concerns about fever, frequency of temperature monitoring, fever management including home fever reduction methods, and parental recall of treatment that their children had received during health care visits for fever, observed health care practices for fever during visits to their family physicians. The questionnaire was administered in the three major spoken languages – English, Mandarin and Malay. The English questionnaire was translated into Mandarin and Malay, then back translated to English by bilingual speakers to ensure a high accuracy in the translation of the questionnaire items. Training was provided to standardise the way in which the questions were asked in order to minimise interviewer bias. Written informed consent was taken from all participants and the study was approved by the Research and Ethics Committee.

Results

Of the 600 eligible parents who were approached, 557 agreed to participate giving a response rate of 92.8%. In terms of ethnicity, 70.4% were Chinese, 16.7% were Malay, 10.2% were Indian and 2.7% belonged to other ethnic groups. In terms of age of the child, 81.1% were between 3 and 36 months and 18.9% older than 36 months. Mothers constituted 78.1%, fathers 16.5% and both parents 5.4% of the respondents

Amongst the parents, 271 (48.6%) considered a temperature equal to or less than 37.8°C (100°F) to be a high fever and 24 (4.3%) believed that the temperature could rise to 43.3°C (110°F) or above if left untreated. Two hundred and eighty-one parents (50.4%) were very worried about fever. Specifically, 510 (91.5%) were worried that fever could possibly cause harmful effects such as brain damage (n = 383, 68.8%), seizure (n = 78, 14.1%) and death (n = 19, 3.4%). Almost half (49.9%) of the parents worried more if the child had a high temperature than if their child looked sick during a febrile illness. Nearly three-quarters (70.5 %) of the parents would check their child's temperature every hour or less when their child had a

fever. In terms of antipyretic use, 138 (24.8%) of parents would administer paracetamol for temperatures equal or less than 37.8°C (100°F) and 478 (85.8%) parents would give antipyretics before the temperature reached 38.9°C (102°F). In terms of fever reduction methods, about the same proportion of parents would give paracetamol either in tablet (38.7%) or liquid form (40.3%) at up to four hourly intervals. In terms of fever reduction technique, 449 (80.6%) parents used sponging including 50 (9.0%) who would initiate sponging for temperatures equal to or less than 37.8°C (100°F).

Forty-one (7.4%) of them would consult the traditional medical practitioner and 62 (11.1%) administer traditional medicine concomitantly with the polyclinic consultation. Traditional practices adopted by parents when their child had fever included showering the child (55.1%), switching off the air conditioner (27%), switching off the fan (11.8%) and wrapping or bundling their child (5.8%). We found that 41 (7.4%) parents would consult traditional doctors as well as Western doctors for their child's fever, while 62 (11.1%) would give traditional herbal remedies to their children during a febrile illness. Of note, 25 (4.5%) parents would give talisman water to their febrile child to drink, 8 (1.4%) would put oil on the child's fontanelle and 7 (1.3%) would put special herbs on the child's hand and feet in an attempt to cool the child.

The most important perceived source of fever knowledge was the medical staff, namely doctors and nurses.

Discussion

There were differences in the nature of the perceived harmful effects between the parents in our current study and that in the Western population. A large proportion (68.8%) of our parents believed that brain damage might be a harmful consequence. This is lower than the findings in previous studies which reported that between 21% and 45% of parents were concerned that brain damage may be an untoward consequence of fever.^{2,4} However, death as a possible perceived harmful consequence was found to be lower in this study (3.2%) compared to that in the earlier two studies which found rates of between 8% and 14% in the parents. In the Asian culture, great importance and premium are commonly placed on educational attainment. This may lead parents to worry more greatly about the effect of the fever on the brain of the child and hence the future consequences such as academic potential rather than death per se although this needs to be further evaluated.

Parents need to be educated about identifying fever as a symptom of an underlying disease rather than the disease itself. In our study, almost half of our parents felt that the level of fever rather than the clinical toxicity of a child was a better indicator in correlating with the likelihood of any serious infection in the child. The clinical features of a sick and toxic child include lethargy, low hydration status, hypoventilation or hyperventilation and cyanosis. These features are just as important for the parents to recognise than to solely focus and depend on the level of fever.⁵ The excessive focus on the level of fever may be translated into excessive temperature monitoring and usage of medication as found in this study. Although the majority of the parents used sponging as a temperature reduction

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method, a smaller proportion of parents would initiate sponging or administer an antipyretic medication at a temperature of equal to or less than 37.8°C (100°F) which was comparable with the findings of the study by Crocetti et al.⁴ However, our parents were more conservative in the dosing frequency and interval of administration of the antipyretic medications. A larger proportion of parents in this study would leave the fans and air-conditioners on perhaps in an attempt to reduce the fever in the child. On the other hand, the practices of not bathing the child, switching off the fan and the air conditioners in other parents could also be attempts to prevent shivering which is commonly observed and may ultimately raise further the temperature of the febrile child. Of note, was the promotion of the ingestion of talisman water as a fever reduction method in a small proportion of the parents. A number of parents would also seek traditional medical practitioners for consultation and resort to taking traditional medicine to manage the fever. The effects of these traditional practices as well as that of the traditional medicines are often not studied and benefits not fully appreciated. Further studies are thus needed to explore the modes of action and possible benefits of these traditional medicines and practices. It also underlines an important need to understand the cultural beliefs and biases of both the parents as well as the clinician in the management of the febrile

child with implications in areas of establishment of therapeutic rapport and alliance. This will lead to a more effective management of the ailment and yet incorporating the explanatory model of the parents

In conclusion, fever phobia is common amongst the parents visiting the polyclinic. The beliefs, practices and perceived source of knowledge for management of the febrile child lend itself to interventions such as better parent education with the potential to reduce needless consultations.

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Best Oral Presentation Award Finalist – General Practice

Revisiting Upper Respiratory Tract Infection (URTI) in Adults in the Light of the Current Severe Acute Respiratory Syndrome (SARS) Situation in Singapore

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Introduction

Upper respiratory tract infection (URTI) is the most common reason for attendance in primary care practice in Singapore, constituting 30% of all attendances seen at primary medical care clinics in year 2001 (unpublished data – Emmanuel S, et al. Survey of primary medical care in Singapore 2001).

In the advent of the new atypical pneumonia called severe acute respiratory syndrome (SARS), whose early phase of the disease can mimic symptoms of URTI,^{3,4} primary care physicians have been thrown into a quandary as to what is simple URTI and what is not. Considering that the consequence of missing an early SARS case has significant morbid and epidemiological implications, it is not uncommon for primary physicians to find the management of any URTI case that walks into the consult a tad more stressful than before. Short of a better characterisation of the clinical presentation of SARS, or better still, a bedside diagnostic kit, the other way primary physicians can cope with this challenging situation is to know its differential diagnosis, URTI, viral fever and dengue fever very well.

A lot of work in URTI has been done on the health seeking behaviour of patients, antibiotic use, therapeutics, prevention and epidemiology in URTI,⁵⁻¹⁴ but not on its symptoms. Barret et al

studied the symptoms and its severity in 2002 as part of a validation of the Wisconsin Upper Respiratory Symptom Survey.¹⁶

The aim of the study was to characterise URTI using detailed symptoms, signs, investigations and outcomes in adult patients who attend a cluster of 9 primary health centres in Singapore and then to compare this with the reported symptomatology of SARS.

Materials and Methods

Subjects

We conducted this prospective study in all 9 clinics belonging to the National Healthcare Group Polyclinics (NHGP). We recruited patients sequentially from each clinic, having first determined the order in a random fashion. Approval to conduct the study was obtained from the National Healthcare Group Ethics Committee.

The study population included 594 consecutive patients who presented with complaints of respiratory tract symptoms from February to April 2002. Inclusion criteria were all patients who were Singaporean residents, aged 21 years and above, who complained of any one of the following, namely cough, nasal (sneezing, runny nose, blocked nose) or throat (sore throat, throat clearing, phlegm in throat) symptoms of <7 days' duration. Patients were excluded if they had history of chronic respiratory problems such as allergic

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rhinitis, chronic sinusitis, asthma or chronic obstructive pulmonary disease, were currently on treatment for tuberculosis, immunocompromised, on long-term antibiotic use, recent antibiotic use in the past 2 weeks, recent travel or hospitalisation, pregnant or currently breastfeeding. Out of a total of 821 eligible patients, 595 gave signed informed consent to participate in the study

Data Collection

We collected data by interview using a structured questionnaire, clinical examination using a standard recording form, blood sample for total white and differential count, throat swab for bacterial culture, and nasal swab for virus identification. Patients were followed-up by phone interviews till resolution of symptoms.

Sections in the questionnaire included questions on the severity of each symptom from a list of 23 symptoms. All interviews and biological sample collection were conducted by the authors and trained nurses. Resident doctors in each of the clinics, who have been briefed on the study protocol, conducted the physical examination and recorded the findings in structured recording forms.

We followed each patient up 1 week later by a telephone call. Patients were asked if there were any change in severity of each symptom in the list, whether there were new symptoms, any side effects of treatment experienced, further medical help sought, and any complications diagnosed. For patients who have not recovered by the first week, second and subsequent phone calls were made till resolution of all symptoms.

Full Blood Count

Full blood count was performed using the Cell-Dyn Haematology Analyzer (Abbott Laboratories).

Bacterial Culture

All bacterial culture and virus identification were performed at the laboratory of one of the authors (RTP Lin).

The potential pathogens looked for were β -haemolytic streptococci of Lancefield groups A, C and G; and predominant heavy growth of *Streptococcus pneumoniae*, *Haemophilus influenzae* or *Moraxella catarrhalis* using standard methods.¹⁶

Immunofluorescence Microscopy for Respiratory Viruses

We used flexible wire swabs (Copan, Italy) to obtain specimens from patients' nasopharynx and transported in the virus transport medium. The specimens were processed for immunofluorescence for influenza A, influenza B, parainfluenza 1, parainfluenza 2, parainfluenza 3 viruses, respiratory syncytial virus and adenovirus and rhino virus.¹⁷⁻²¹

Results

Descriptive Profile of Patients

There were 318 males (53.5%) and 276 females (46.5%). The mean age was 45.4 years (standard deviation [SD]: ± 14.9), and median 45.0 years (range 21-88). The ethnic distribution was Chinese 69.1%, Malay 17.5%, Indian 11.1% and Others 2.2%. 69.8% were non-smokers, 20.7% current smokers and 9.4% ex-smokers.

Symptoms

The most common symptom was cough (88%), followed by dry mouth (76%). Phlegm in the throat, throat clearing, sore throat, runny nose, itch at the back of throat, hoarse voice, sneezing and block nose occurred around the same frequency (62-73%)

More than half the patients also reported body aches, weakness, difficulty sleeping and drowsiness. Whilst 39% reported having fever, only 11% were detected to have fever at physical examination. 32% reported shortness of breath and 26% reported chest tightness. However, only 1.3% (8) patients were found to have abnormal

auscultatory findings. Up to 15% of the patients reported some form of gastrointestinal symptoms, e.g., nausea, abdominal pain, diarrhoea and vomiting.

In terms of symptom resolution, cough, phlegm in the throat, runny nose and drowsiness tended not to resolve as fast as symptoms like difficulty sleeping, weakness, fever, chest tightness, shortness of breath and gastrointestinal symptoms.

Physical Examination

78% of patients who attended for URTI symptoms had throat injection. Nasal discharge was observed in 53% of patients. Tonsillar enlargement and exudates and cervical lymphadenopathy occurred less than 8% of the cases.

Laboratory Findings

Total white count and the lymphocyte count were predominantly within normal range. More than half of the polymorphonuclear leukocyte count were less than 60%.

A viral agent was detected in 25% (147) of the cases, of which 133 were rhinoviruses. Only 2% (11) of the cases had a bacteria isolated. 3 cases had both viral and bacterial agents isolated. There were no cases of Group A beta *Haemolytic streptococcus* isolated. 73% of the cases had growth of normal flora.

Outcome Parameters

Only 30% of the patients had less than 9 symptoms at consultation, with 31% reporting more than 13 symptoms. The mean number of symptoms was 11. However, by the first review, 66% of the patients had <9 symptoms. 49% of the patients recovered fully after 7 days. 7% were still unwell after 14 days. And longest duration of symptoms was 33 days. Less than 4% had either facial pain or ear pain but 18% reported some complication of medication, with sedation as the most common side effect affecting 14% of the patients. 9% (52) patients consulted again after the index consultation for the same episode of URTI.

Comparison with the Reported Symptoms of SARS (Table I)

Cough, body aches and shortness of breath occurred with almost the same frequency as that of SARS patients in both the Hong Kong and Canadian clusters^{3,4} as well as the cluster of 135 patients from Singapore (Leo YS, et al. CDC Singapore. Singapore SARS task force).

Fever was more than twice as common in SARS; rhinorrhoea was more than 6 times and sore throat more than twice as common in URTI.

TABLE I: SYMPTOMS OF SARS AS REPORTED BY VARIOUS STUDIES COMPARED TO THE NHGP URTI STUDY

Symptom	Singapore SARS n = 135 (Unpublished data)	Hong Kong SARS n = 138 <i>N Engl J Med</i> April 2003 ⁴	Canada SARS n = 10 <i>N Engl J Med</i> March 2003 ⁵	NHGP URTI Study n = 594
*Fever	100%	100%	100%	39%
Cough	70%	57%	100%	88%
Myalgia	51%	61%	20%	59%
Dyspnoea	34%	60%	80%	32%
Nausea	31%	20%	10%	15%
*Sore throat	26%	23%	30%	70%
Diarrhoea	22%	20%	50%	10%
Malaise	19%	70%	70%	59%
Headache	18%	-	30%	-
*Rhinorrhoea	5%	10%	-	67%

Discussion

Primary health physicians may find symptoms, such as cough, body aches and shortness of breath, less useful in the diagnosis of early SARS, in view of substantial overlap in frequency of such symptoms. Fever, sorethroat and runny nose occur consistently in different frequencies between the 2 diseases and may help in differentiating them, bearing in mind that the knowledge of the clinical presentation of SARS is still evolving.

The description of the natural history of symptoms will also be useful in educating physicians, patients and employers with regards to realistic expectation of resolution of symptoms. During the current SARS situation, primary physicians have been seeing increased number of repeat attendances because of the failure of symptoms to resolve promptly and the understandable anxiety of the patients who are still symptomatic.

The number of complications from URTI was negligible except for the side effects caused by medication. Over medicalizing this self-limited disease should also be avoided.

Conclusion

In a group of 594 adults attending for URTI in NHGP, the most common symptom is cough, followed by dry mouth and phlegm in the throat. Each patient had experienced an average of 11 symptoms. The most common signs are throat injection and nasal discharge. Viral cause was 12 times more common than bacterial. The disease is self-limiting and the most common complication of URTI was side effect due to medications.

Symptoms such as fever, runny nose and sore throat may be more useful in differentiating early SARS from URTI than cough, shortness of breath and body aches.

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