

Assessment of the knowledge of medical officers in the management of children presenting with febrile illnesses

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Abstract

Introduction: Childhood fever is a common reason to seek medical advice for a child globally. Correct decision making and appropriate interventions, which depend on relevant knowledge, are critical in the management of these children.

Objectives: To assess the knowledge of medical officers (MOs) in the management of children presenting with febrile illnesses in Badulla district

Method: A descriptive cross sectional study was carried out among MOs serving in the Badulla Deputy Provincial Director of Health Service area using a self-administered questionnaire with 80 knowledge assessment questions for which scores were given. Cut off scores for knowledge level were demarcated using the inter-quartile range of the set of scores of the sample.

Results: Of the 210 MOs who were given the self-administered questionnaire, 189 (90%) who responded formed the study group. Knowledge scores were skewed towards the left with the mean 55.7, median 56.0, mode 49.0, minimum 35.0, maximum 79.0, skewness -0.212 and standard deviation \pm 8.6. Nearly equal proportions had poor, satisfactory and good knowledge. Level of knowledge was stratified according to the job category and duration of experience in order to target possible corrective measures more effectively. Level of knowledge was seen to be increasing among medical officers who had less than two years of experience but the association was not significant ($p > 0.05$). Level of knowledge was also seen to be increasing among medical officers who worked with in-ward paediatric cases and the association was significant at $p < 0.01$ level. Nearly 60% of each referred National Guidelines and text books while internet and journals were referred by 45% and 22% respectively.

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Conclusions: One third of medical officers had good knowledge and the level of knowledge was seen to be significantly decreased in those who did not work with paediatric in-ward cases.

(Key words: fever, children, knowledge)

Introduction

Fever is an extremely common sign in paediatric patients and the most common cause for a child to be taken to a doctor¹. Twenty to 40% of parents report febrile illnesses in their children each year¹⁻⁴. In most cases, fever is due to a self-limiting viral infection, but it may also be the presenting feature of serious bacterial infections such as meningitis or pneumonia. Fortunately, this represents only a minority of cases⁵. In these cases, fever is considered a beneficial part of the immune response^{6,7}. More recent studies have shown that around 48% of children show no obvious cause for fever despite careful assessment⁸.

Myths and misperceptions about children with temperature elevations are common. Fever phobia is well described as existing with both caregivers as well as healthcare (medical) providers^{4,9}. Correct decision-making and appropriate interventions are critical in the management of children presenting with febrile illnesses, to reduce morbidity and mortality, to be cost-effective and also to alleviate parental anxiety, which is at times contributed to by myths and misperceptions².

Objectives

- To assess knowledge among MOs on management of children presenting with febrile illnesses in Badulla district
- To stratify the level of knowledge according to job category and experience of doctors
- To identify resources of information available on the subject for medical officers
- To assess frequency of updating knowledge

Method

A descriptive cross-sectional study was carried out among medical officers (MOs) who worked in government healthcare institutions in the Badulla Deputy Provincial Director of Health Service (DPDHS) area, where febrile children were managed by MOs. All the relevant MOs were invited to participate in the study. All knowledge questions were closed-ended and answers were based on two responses: correct or wrong. The questions were mainly based on the “National Guidelines for Management of a Febrile Child” and were contributed to also by other reputed guidelines. Our hypothesis was that the dissemination of National Guidelines would have improved knowledge of MOs. A questionnaire was distributed among all the MOs who were managing febrile children in the institutions in the study area, requesting completion of the questionnaire individually. Questionnaires were filled under the supervision of an investigator and were collected immediately on completion. Data entry was done using EPIINFO data 3.2. Data was analyzed by a statistician using SPSS 19.0 software. Interquartile range was used to determine the level of knowledge on management of fever. Related characteristics were compared with knowledge separately using Chi-square test. This study was approved by the ethics review committee of the Sri Lanka College of Paediatricians.

Results

Of the 210 MOs who were given the self-administered questionnaire, 189 (90%) completed the questionnaire and formed the study group. The male: female ratio was 1.17.

Table 1 shows the demographic characteristics of the study sample.

Table 1
Demographical characteristics of medical officers (n=189)

Characteristic	Number (%)
<i>Sex</i>	
Male	102 (54)
Female	87 (46)
<i>Marital status</i>	
Married	138 (73)
Unmarried	51 (27)
<i>Ethnicity</i>	
Sinhala	167 (88.4)
Tamil	08 (04.2)
Muslim	14 (07.4)

Table 2 shows the working institute, working in paediatric wards and the duration of service in the study sample.

Table 2
Working institute, working in paediatric wards & duration of service

Workplace/ Service	Number (%)
<i>Working institute</i>	
Primary care institution	25 (13.2)
Secondary care institution	164 (86.8)
<i>Working in paediatric wards</i>	
Yes	72 (38.1)
No	117 (61.9)
<i>Duration of service</i>	
Less than 2 years	88 (46.6)
2 or more years	101 (53.4)

Table 3 shows the methods of gaining knowledge by the participants on management of children presenting with febrile illness.

Table 3
Methods of gaining knowledge on management of children with febrile illness

Method	Number (%)
Lecture notes	110 (58.2)
Text books	141(74.6)
National guidelines	115 (60.8)
Journals	60 (31.7)
Ward round	92 (48.7)
Internet	91 (48.1)
Lectures	87 (46.0)
Seniors	93 (49.2)
Discussions	73 (38.6)
Other	01 (0.50)

Table 4 shows the type of resources available for the MOs for reference in their working institute.

Table 4
Type of resources available on management of children with febrile illness

Type of resource	Number (%)
National guidelines	125 (66.1%)
Text books	123 (65.1%)
Journals	42 (22.2%)
Internet	86 (46.5%)
None	22 (11.6%)
Other	04 (02.1%)

Table 5 shows the frequency of updating knowledge.

Table 5
Frequency of updating knowledge

Frequency	Number (%)
More than once a month	48 (25.4)
Once a month	42 (22.2)
More than once in six months	30 (15.9)
Once in six months	21 (11.1)
Once a year	21 (11.1)
Once in a few years	25 (13.2)
Never	02 (1.1%)
Total	189 (100.0)

In the present study, there were 80 questions. Questions were categorised into three groups: 'must know', 'better to know' and 'good to know'. There were 49 questions in the 'must know' category, 16 questions in the 'better to know' category and 15 questions in the 'good to know' category. Most of the questions were answered correctly. Only 23 questions scored less than 60% each. Scores were given for the knowledge assessment questionnaire as follows:

Correct answer: +1
 Incorrect answer: 0

Cut off scores for knowledge level were demarcated using the interquartile range of the set of scores of the sample. The interquartile range is the difference between 25th and the 75th percentile and contains 50% of the observations.

The distribution of the level of knowledge on management of fever is shown in Table 6.

Table 6
Distribution of level of knowledge on management of fever

Level of knowledge	Number (%)
Good	63 (33.3)
Satisfactory	64 (33.9)
Poor	62 (32.8)
Total	189 (100.0)

The level of knowledge according to working with paediatric cases is shown in Table 7.

Table 7
Level of knowledge according to dealing with paediatric cases

Level of knowledge	Knowledge variation			
	Poor No. (%)	Satisfactory No. (%)	Good No. (%)	Total No. (%)
Working with paediatric cases	39 (28.7)	47 (34.6)	50 (36.8)	136 (100.0)
Not working with paediatric cases	23 (43.4)	17 (32.1)	13 (24.5)	53 (100.0)
Total	62 (32.8)	64 (33.9)	63 (33.3)	189 (100.0)

$\chi^2 = 10.7, df=2, p<0.01$

A statistically significant association was observed with level of knowledge on management of fever and status of dealing with paediatric cases. Level of knowledge was increasing among those working with paediatric cases while level of knowledge was decreasing among those who did not work with paediatric cases. This association was significant at 0.01 levels.

The level of knowledge according to duration of service is shown in Table 8,

Table 8
Level of knowledge according to duration of service

Duration of service	Knowledge variation			
	Poor No. (%)	Satisfactory No. (%)	Good No. (%)	Total No. (%)
Less than 2 years	23 (26.1)	32 (36.4)	33 (37/5)	88 (100.0)
2 or more years	39 (38.6)	32 (31.7)	30 (29.7)	101 (100.0)
Total	62 (32.8)	64 (33.9)	63 (33.3)	189 (100.0)

$\chi^2 = 3.39, df=2, p>0.05$

No association was observed between the duration of service and the level of knowledge on management of fever.

Discussion

Literature review identified several studies on the assessment of knowledge of medical officers on the management of febrile illnesses in children. A cross

sectional study carried out in 2010 by Demir and Sekreter among 80 primary care physicians in Turkey found that only 10% of physicians knew the definition of fever, only 26% considered signs and symptoms other than fever to prescribe antipyretics and that 85% prescribed antipyretics to control fever or prevent complications of fever, especially febrile seizures¹⁰. The present study found that 27.5% knew that the normal axillary temperature was 34.7°C to 37.3°C (94.5°F to 99.1°F). In the study by Demir and Sekreter¹⁰, 76.3% physicians reported that the height of fever may be used as an indicator of severe bacterial infection. In the present study nearly 26% reported that the height of fever may be used as an indicator for severe bacterial infection. The study by Demir and Sekreter¹⁰ also found that 91.3% of physicians stated that they advised parents to alternate the use of ibuprofen and paracetamol. About 90.5% in our study knew that if the response is poor to paracetamol ibuprofen has to be started

Another cross-sectional study was conducted in Italy to assess the knowledge of paediatricians based on Italian guidelines for the management of fever (IFG) in children¹¹. Differences in responses between 2009 and 2012 and between paediatricians who were or were not aware of the IFG were evaluated. The response rates were 74% in 2009 and 69% in 2012. In 2012, 56% of participants were aware of the IFG. The proportion of paediatricians who correctly would never suggest the use of physical methods increased from 18.7% to 36.4% (P<0.001). In 2009, 11% of paediatricians declared that the use of antipyretic drugs depends on patient discomfort and did not use a temperature cut off. In 2012 this percentage reached 45.3% (P<0.001). Alternate use of antipyretics decreased from 27% to 11.3% (P<0.001). In general, improvements were more striking in paediatricians who were aware of the IFG than in those who were not aware of them. The present study did not find a significant association between those who updated their knowledge with national guidelines on management of fever and the level of knowledge.

Chiappini et al. in their study in Italy also assessed paediatricians' knowledge on the management of fever¹². Overall, 480 paediatricians were interviewed. Several incorrect behaviours were found among paediatricians, 377 (78.5%) using physical methods to reduce fever and 103 (27%) stating that they alternated ibuprofen and acetaminophen.

The present study is an assessment of current knowledge on management of paediatric fever in 189 medical officers. A descriptive cross sectional study design was selected since it was considered

suitable to determine the level of knowledge and its correlates. Sampling calculation was not done as the total study population was studied. The overall response rate was 90% which was satisfactory. This is in contrast to the response rates recorded by Chiappini et al¹¹ of 74% in 2009 and 69% in 2012. Level of knowledge was assessed using 80 pretested self-administered questions which are most appropriate when the level of education was high. Questionnaire was designed following literature review and expert opinion.

Conclusions

- Approximately one third of the medical officers had good knowledge in management of febrile illness, one third had satisfactory knowledge and one third had poor knowledge.
- Level of knowledge was significantly decreased in those who did not work with paediatric cases.
- There was no significant association found between the level of experience and the knowledge.
- Approximately 50% of medical officers updated their knowledge once in 6 months or less frequently.
- Mostly referred resource of information was textbooks (74.6%) whereas 66.1% of the participants declared that they have national guidelines in their institutions and 60.8% were using the guidelines to update their knowledge.

Recommendations

- Availability of resources of information including national guidelines (currently 66.1%) has to be improved.
- Educational programmes targeting specially the medical officers who do not have exposure to in ward paediatric care may be effective as knowledge scores are less in this group.
- Institution based supervised updating sessions are recommended to achieve more frequent updating

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