



Do Pharmacy Students & Pharmacists Exhibit Fever Phobia?

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Background

- A fever enhances the body's natural immune response
 - The degree of a fever does not correlate with severity of illness
 - Per the "Fever and Antipyretic Use in Children" report published by the American Academy of Pediatrics (AAP) in 2011, the primary goal of antipyretic therapy is to improve the comfort of a child
- "Fever phobia" was coined by Dr. Barton Schmitt in 1980
 - The term describes parents' over-concern related to fevers in children
 - Additional research published by Crocetti and colleagues in 2001 documented that caregivers continue to have fever phobia
- Fever phobia has not been thoroughly studied in the pharmacy profession
 - Fever phobia among pharmacists may lead to unnecessary or inappropriate treatment in children

Objectives

- Primary: to compare the knowledge and beliefs of pharmacists and pharmacy students about fevers in children ≥ 6 months of age

Methods

- The study was granted exemption from the University of Maryland Institutional Review Board
- Inclusion criteria: pharmacists and 3rd and 4th year pharmacy students
- Exclusion criteria: unable to read English
- A 30-item survey was developed with Google Forms
 - 14 questions were regarding demographics, pharmacy practice site, and pediatric practice experience
 - 16 questions tested the knowledge and beliefs about fevers in children ≥ 6 months of age
 - Several questions were modeled from the survey developed by Crocetti and colleagues
 - Answers for the survey were based on the "Fever and Antipyretic Use in Children" report published by AAP
- Survey was available for voluntary, anonymous, electronic completion from January-March 2015
 - Survey was emailed through the Maryland Society of Health-System Pharmacists (MSHP), Maryland Pharmacists Association (MPhA), University of Maryland School of Pharmacy (UMSOP) alumni, and UMSOP 3rd and 4th year student listservs
- Responses between groups were compared using the Chi-squared or Fisher's exact test
 - Targeted 100 participants per group to detect a 20% difference in knowledge about fevers
 - Power and alpha were set at 80% and 0.05, respectively

Results

TABLE 1: Demographic and baseline characteristics

	Pharmacists (N = 84)	Pharmacy students (N = 75)	p-value
Female gender, no. (%)	58 (69.0)	58 (77.3)	p=0.24
Race, no. (%)			
Asian	13 (15.5)	41 (54.7)	p<0.001
White	66 (78.6)	27 (36.0)	p<0.001
African American	2 (2.4)	4 (5.3)	p=0.42
Other/mixed	3 (3.6)	3 (4.0)	p=1
Hispanic or Latino, no. (%)	1 (1.2)	0 (0)	p=1
Parent, no. (%)	44 (52.4)	8 (10.7)	p<0.001
Of those that are a parent, age of children, no. (%)			
≤ 10 years only	23 (52.3)	4 (50.0)	p=1
>10 years only	13 (29.5)	1 (12.5)	p=0.42
both	4 (9.1)	2 (25.0)	p=0.23
Pharmacists (N = 84)			
Years in practice, no. (%)		Year in school, no. (%)	
≤ 5 years	36 (42.9)	3 rd year	31 (41.3)
6-10 years	13 (15.5)	4 th year	44 (58.7)
11-15 years	12 (14.3)		
≥ 16 years	23 (27.4)		
Area of practice, no. (%)		Currently work in pharmacy, no. (%)	40 (53.3)
Community chain	17 (20.2)	Of those that work, no. (%)	
Community independent	9 (10.7)	Care for the pediatric population	21 (52.5)
Long-term care facility	2 (2.4)		
Hospital	26 (31.0)		
Clinical	10 (11.9)		
Academia	7 (8.3)		
Home infusion	1 (1.2)		
Other	12 (14.3)		
Currently care for the pediatric population in area of practice, no. (%)	41 (48.8)	Taken pediatrics elective offered at UMSOP, no. (%)	15 (20)
In the past, have cared for the pediatric population in area of practice, no. (%)	56 (66.7)		

TABLE 2: Survey responses

	Pharmacists (N = 84)	Pharmacy students (N = 75)	p-value
When should a child with a fever be treated, no. (%)			
$\geq 38^\circ\text{C}$ ($\geq 100.4^\circ\text{F}$)	44 (52.4)	44 (58.7)	
$\geq 39^\circ\text{C}$ ($\geq 102.2^\circ\text{F}$)	23 (27.4)	17 (22.7)	
$\geq 40^\circ\text{C}$ ($\geq 104^\circ\text{F}$)	3 (3.6)	1 (1.3)	
When the child is uncomfortable	13 (15.5)	13 (17.3)	p=0.75
What danger(s) can occur with high fevers, no. (%)			
Seizures	84 (100.0)	65 (86.7)	p<0.001
Brain damage	71 (84.5)	67 (89.3)	p=0.37
Serious infectious illness	45 (53.6)	36 (48.0)	p=0.48
Death	62 (73.8)	59 (78.7)	p=0.47
None of the above	0	0	
If a child has a fever when he or she goes to bed, would not recommend awakening child in the middle of the night to give acetaminophen or ibuprofen, no. (%)	67 (79.8)	53 (70.7)	p=0.18
When a child should be referred for additional care, no. (%)			
High fever/fever reaches a specific temperature	50 (59.5)	31 (41.3)	
Fever persists/worsens/unresponsive to antipyretics	54 (64.3)	53 (70.7)	
Child's symptoms develop/persist/worsen	38 (45.2)	37 (49.3)	p=0.61

Additional Results

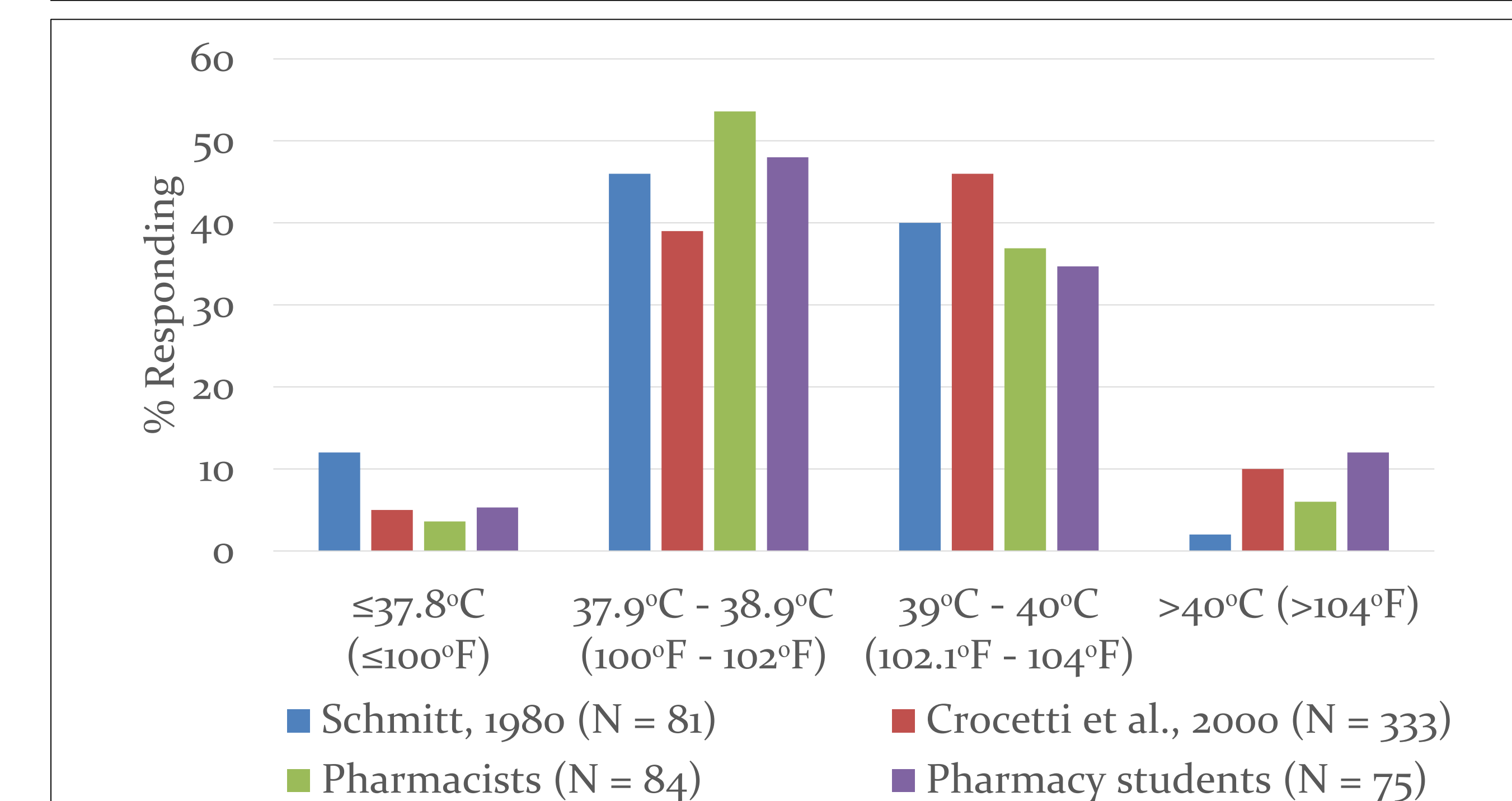


FIGURE 1: Definition of a high fever

Conclusions

- Fever phobia was exhibited in 83.7% of participants who chose to treat fevers at specific temperatures
- While no relationship has been established, more than 75% of participants believe that fevers can cause brain damage and death
- Despite the current guidelines, about 25% of participants would recommend awakening a child in the middle of the night to administer antipyretic medication
- Almost 50% of pharmacists and pharmacy students would correctly recommend additional care after considering the course of the fever and presence of symptoms. More pharmacists than pharmacy students incorrectly took into consideration the temperature when recommending additional care.
- There is a need for increased fever education to pharmacists and pharmacy students

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Disclosures

The Authors have nothing to disclose regarding financial or personal relationships with commercial entities.