Relationships between Childhood Fever Management of Bhutanese Parents and Their Knowledge, Attitude, and Perceived Self-efficacy

นิพนธ์ต้นฉบับ

Original Article

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บทคัดย่อ

วัตถุประสงค์: เพื่อประเมินการจัดการไข้ในเด็กของบิดามารดาผู้ปกครองและระบุความสัมพันธ์ระหว่างการจัดการไข้นี้กับความรู้ เจตคติ และการรับรู้สมรรถนะแห่งตนของบิดามารดาผู้ปกครองในประเทศภูฏาน **วิธีการศึกษา:** ใช้การสุ่มตัวอย่างแบบสะดวกในการหาพ่อแม่ชาวภูฏานจำนวน 80 คนที่พาลูกมาตรวจที่หน่วยผู้ป่วยนอกเด็กของโรงพยาบาลแห่งชาติจิกมีดอร์จิวังชุก ประเทศภูฏาน เครื่องมือที่ใช้ในการวิจัยประกอบด้วย 1) แบบบันทึกข้อมูลส่วนบุคคล 2) แบบสอบถามการจัดการไข้ของบิดามารดา 3) แบบวัดความรู้ของบิดามารดา 4) แบบวัดเจตคติของบิดามารดา และ 5) แบบสอบถามการรับรู้สมรรถนะแห่งตนโดยแบบสอบถามที่ 2 – 5 มีความเที่ยงที่ยอมรับได้ (สัมประสิทธิแอลฟาของครอนบาค = 0.79, 0.71, 0.88 และ 0.86 ตามลำดับ) รวบรวมข้อมูลระหว่างเดือนมีนาคมถึงเมษายน พ.ศ. 2560 วิเคราะห์ข้อมูลโดยใช้สถิติพรรณนาและสหสัมพันธ์แบบเพียร์สัน **ผลการศึกษา:** พบว่าค่าเฉลี่ยโดยรวมของการจัดการไข้ในเด็กของบิดามารดาเท่ากับ 39.51 (SD = 5.59) การจัดการไข้นี้มีความสัมพันธ์ทางบวกกับความรู้ เจตคติ และการรับรู้สมรรถนะแห่งตนของบิดามารดา (r = 0.28, 0.24 และ 0.24 ตามลำดับ; *P*-value < 0.05 ทุกคู่ความสัมพันธ์). **สรุป:** ยังคงมีช่องว่างที่สามารถพัฒนาการจัดการไข้ในเด็กของบิดามารดาชาวภูฏาน บุคลากรทางการแพทย์โดยเฉพาะพยาบาลสามารถนำผลการศึกษานี้ไปพัฒนาโปรแกรมที่ช่วยเพิ่มพูนหรือส่งเสริมการจัดการไข้ในเด็กของบิดามารดาโดยเน้นการเพิ่มความรู้ เจตคติ และการรับรู้สมรรถนะแห่งตน

คำสำคัญ: การจัดการไข้ในเด็ก, พ่อแม่ชาวภูฏาน, ความรู้, เจตคติ, การรับรู้สมรรถนะแห่งตน

Abstract

Objective: To examine parents' management of childhood fever and its relationships with the knowledge, attitudes, and perceived self-efficacy of Bhutanese parents. **Method:** A convenience sampling was used to recruit a sample of 80 Bhutanese parents bringing their children with fever to the Pediatric Outpatient Unit of Jigme Dorji Wangchuck National Referral Hospital. Research instruments included 1) demographic record form, 2) parents' childhood fever management questionnaire, 3) parents' knowledge questionnaire, 4) parents' attitude questionnaire, and 5) parents' perceived self-efficacy scale. The reliabilities of questionnaires 2 - 5 were acceptable, i.e. Cronbach's alpha coefficients = 0.79, 0.71, 0.88, and 0.86, respectively. Data were collected from March to April 2017 and analyzed using descriptive statistics and Pearson's correlation. **Results:** The total mean score of parents' childhood fever management was 39.51 (SD = 5.59). There were significantly positive relationships between the parents' childhood fever management and their knowledge, attitudes, and perceived self-efficacy (r = 0.28, 0.24 and 0.24, respectively; *P*-value < 0.05 for all pairs). **Conclusion:** There was a room for improvement of the childhood fever management of Bhutanese parents. Healthcare providers, especially nurses, could utilize the findings to develop an intervention or a program to improve and enhance parent's management of fever in children by focusing on an increase in knowledge, attitude, and perceived self-efficacy.

Keywords: childhood fever management, Bhutanese parents, knowledge, attitude, perceived self-efficacy

Introduction

Fever is one of the most common symptom of illnesses in children and the most frequent reason parents seek medical attention. A study at a pediatric emergency department found that 70% of all appointments with a family physician were concerned only with fever.[1] Similarly, fever accounts for 6% of visits to pediatricians, along with numerous visits to general practitioners, emergency departments, and out-of-hours care service in the US.[2] In the United Kingdom, based on the National Institute for Health and Care Excellence [NICE] (2013), febrile illness was very common among young children.[3] About 20 to 40% of parents reported such an illness each year. Childhood fever was a common reason for seeking health advice out of hours in the UK.[3] Similarly, in Bhutan, approximately 62,459 children under five years of age have sought medical attention with common cold with fever symptom.[4]

Fever is defined as an elevation of body temperature above the normal daily deviation.[3,5] Fever itself is not a disease. It is rather a sign of an underlying disease that activates an immune response which occurs after the exposure to pyrogen.[6,7] When the body is exposed to pyrogens, it results in increased prostaglandin production

and which in turn stimulates the hypothalamus to raise the "set point' of the body's temperature.[6] It is generally accepted that fever is characterized by a body temperature above 37.5°C or 99.5°F.[3,9] Though the infection is the most common cause of fever in children, yet there are other many non-infectious causes of fever in this population. The statistics showed that the most common cause was viral, which could be managed by parents with adequate knowledge.[7,8] Fever imposes an increase in metabolic demand, especially during the chill-phase in the young children. Kliegman and colleagues (2016)[9] stated that fever could result in an extreme malaise, children's subjective complaints of feeling hot/cold, arthralgia, myalgia, and changes in heart rate with tachycardia as the most common sign (a rise of heart rate by 10 beats/min per 1°C elevation in temperature). These symptoms are associated with distress, discomfort and dehydration. Fever increases sympathetic tone, oxygen consumption, respiratory minute volume, respiratory quotient.[10] Another frightening effect of fever in children is febrile seizure. This type of seizure is commonly triggered by high fever in the pediatric population within the age range of 6 months to 5 years, and most common during the second year of life.[11,12] Thus, parents have a key role and responsibility in taking care of their febrile children. Parents deliver the most vital basic needs of their child such as touch and emotional comfort, personal hygiene, dressing changes, procedures, and food and fluids apart from their crucial task of clinical fever management.[13]

Walsh (2008) indicated that the appropriate fever management in children included careful observation for preventing dehydration, supporting the febrile response and reducing distressing symptoms such as pain and discomfort.[14] Furthermore, she emphasized that the degree of illness was determined from the child's interactions with the environment by observing their alertness, playfulness and consolability in addition to physical observations such as petechiae, bulging fontanelle, nasal flaring and response to stimuli. However, fever should be reduced in children who have preexisting comorbidity that can place them at risk from increased physiological demands of fever.[3,9,14] The golden rule for uncomplicated fever management in children is to increase the child's comfort or decrease discomfort by providing adequate fluids intake and removing excess clothing or wrappings.[3,9,14-18] Pharmacological management with antipyretic agents (paracetamol) should not routinely be used with the sole aim of reducing body temperature in children. In addition, NICE (2013) advised home-based antipyretic treatment for minimal risk of feverish children only when the child appears distressed.[3] Therefore, parental role in caring the children with fever has a significant contribution in effective fever management. However, there are numerous factors which influence the parents' childhood fever management. It included parents' knowledge about fever management,[4] attitudes towards the management,[2,14,20] and perceived self-efficacy for the management.[21,22]

This present study was guided by Walsh's program of research on fever management (2008)[14] for children aged six months to 5 years. Walsh stated that parents' knowledge and attitudes determines the appropriate fever management in children.[14] Appropriate childhood fever management included careful observation of the child's response to fever such as preventing dehydration, reducing distressing symptoms such as pain and discomfort rather than aggressively treating fever with antipyretics and tepid sponging. Moreover, parents' perceived self-efficacy has influenced the effective childhood fever management because self-efficacy in a general context means a person's belief in his/her ability to perform a task or obtain a goal.[32]

Parents' knowledge about fever management plays a key role in taking care of febrile child. Knowledge in fever management in children is divided into understanding about fever symptom, cause, and its management. There were statistically significant positive correlations between knowledge about fever and childhood fever management.[23,24] However, the knowledge of temperatures representing fever was poor among parents.[1,25-27] Parental knowledge about the tepid sponge and appropriate dosing of antipyretics was questionable.[2,28] Moreover, parents often woke their children by tepid sponging and would check the temperature frequently within 30 minutes which inhibited require time for the child's rest during febrile illness.[29] NICE also recommended that parents who wish to care the child at home should be given advice on how to manage fever with verbal or written information on fever and fever management.[3]

Similarly, parents' attitudes towards fever management was found to be a significant factor associated with childhood fever management.[20] NICE guideline recommended home based antipyretics use for symptomatic reliefs which includes relieving fever-associated discomfort

and improving general behavior.[3] The parents' poor attitudes towards fever management could potentially develop into fear of fever and necessitate a prompt action.[26,30] Basically, parents' practices changed over time because of positive and negative experiences with fever.[14] Parents' attitudes convey either positive or negative beliefs about fever that often result in the consequent behavior. Moreover, the traditional Bhutanese beliefs of performing religious rituals to heal the sickness could bring the parents fear and anxiety which could become the confronting issues in parents' childhood fever management.[31]

Parents' perceived self-efficacy has influenced the parent's performance of care including the effective childhood fever management. Self-efficacy in a general context means a person's belief in his/her ability to perform a task or obtain a goal.[32] It was supported by many studies with significant positive correlations between perceived self-efficacy and good health care behaviors.[21,22] Perceived self-efficacy also indicated confidence and willingness to learn effective ways of fever management.[33] A study by Wood and colleagues[34] among asthmatic children revealed that there was a positive relationship between high parental self-efficacy and successful asthma management in their children. Perceived self-efficacy is one of the significant influencing factors in childhood fever management, since it is highly correlated with a person's performance.[35] In addition, parents' perceived self-efficacy in fever management was found to have a significant positive correlation with fever management among Korean parents.[23] With experiences of the issue in some other countries, there has been no studies to understand the perceived self-efficacy among Bhutanese parents in childhood fever management.

From this literature review, febrile illness among young children has been cared by their parents. Unfortunately, fever in young children is often misunderstood and inappropriately managed by parents. From the author's professional experience, Bhutanese parents visiting emergency department with their febrile child usually drenched their child in very cold water which was an inappropriate practice. In addition, some parents have lost their young child from self-limiting viral febrile infection. The child would have been saved if the parent could appropriately manage the fever at home. No study has been conducted to examine childhood fever management practice among Bhutanese parents. Therefore, the present study aimed to examine parents' childhood fever management and determine relationships between the management and parents' knowledge, attitudes, and perceived self-efficacy among parents in Bhutan. Findings from this study could be useful in developing an intervention or guideline for encouraging effective childhood fever management among Bhutanese parents.

Methods

A descriptive correlational design was employed in this study. The study was conducted at the Pediatric Outpatient Unit of Jigme Dorji Wangchuck National Referral Hospital (JDWNRH), the only national hospital in the country situated in a capital city of Bhutan. The hospital caters to the highest total population of 126,988 of the country's people residing.[36] The study was conducted from March to April 2017.

Population and sample

The target population of this study was Bhutanese parents (either mother or father) who brought their young children aged 6 months to 5 years with a complaint of fever for consultation at the hospital. The study sample consisted of 80 Bhutanese parents with their febrile children presenting at the Pediatric Outpatient Unit of Jigme Dorji Wangchuck National Referral Hospital (JDWNRH). The inclusion criteria for these participating parents were 1) age of 18 years or older, 2) being the primary caregiver of febrile child at home, and 3) being able to communicate, read, and write in English language. Parents of children with any serious chronic problem or complications such as seizure disorder and heart diseases, were excluded.

The sample size in this study was calculated using Thorndike's (1978) formula which was recommended for testing a correlation.[37] The formula is $N = 10(k) + 50$ where N is the sample size and k the number of independent variables. With 3 independent variables namely parents' knowledge, attitudes and perceived self-efficacy, our study required at least 80 participants.

Research instruments

Data were collected using 5 questionnaires as follows.

Demographic questionnaire

This questionnaire was developed by the researchers. It contained information of the parents' characteristic including

age, gender, number of children, educational level, marital status, and occupation. Child's characteristic information included gender, date of birth, frequency of fever in the last 6 months, and the body temperature were also recorded.

The Parents' Fever Management Questionnaire (PFMQ)

The PFMQ was developed by the researcher based on literature review. It contained 13 items measuring parents' practice when their children had fever. Each item response score ranged from 1 (never) to 2 (rarely), 3 (sometimes), 4 (mostly), and 5 (always). For items with negative aspect of parental fever management practice (items 2, 4, 6, 7, 9 and 10), their scores were reversed. Higher scores indicated a more appropriate childhood fever management practice among Bhutanese parents. The Content Validity Index (CVI) of this instrument after validation from three experts was 0.92. In this study, the instrument yielded an acceptable internal consistency reliability with a Cronbach's alpha coefficient of 0.79.

The Parents' Knowledge Questionnaire (PKQ)

The PKQ was developed by researcher based on literature review. It contained 12 items including understanding of child's temperature (3 items), causes of fever (1 item), and management (8 items). Each correct answer was given a score of 1 while the wrong answer was given a score of 0. Higher total scores indicated a higher level of knowledge of the parent in fever management. The possible total scores were 0 to 12. The CVI of this instrument after validation from three experts was 0.92. In this study, the instrument yielded an acceptable reliability with a Kuder-Richardson 20 (KR-20) of 0.71.

The Parents' Attitudes towards Questionnaire (PAQ)

The PAQ was developed by the researcher based on literature review. It contained 12 items measuring parents' attitude in terms of feeling or perception related to fever and caring for their child. Each item score ranged from 1 (strongly disagree) to 2 (disagree), 3 (not sure), 4 (agree), and 5 (strongly agree). Scores of items with negative aspects of attitudes (items 1, 3, 5, 6, 7 and 9) were reversed. The possible total scores ranged from 12 to 60. Higher scores indicated a more positive parents' attitudes towards childhood fever management among Bhutanese parents. The CVI of this instrument after validation from three experts was 0.92. In this study, a high reliability with a Cronbach's alpha coefficient of 0.88 was obtained.

The Parents Self-Efficacy Scale (PSES)

In this study, the parents' perceived self-efficacy was measured with 2 items of the PSES which was developed by Jeong et al. (2010).[23] Each question had a score on a 10-point scale from 1 (I do not know) to 10 (I know very well) of self-efficacy. Possible total scores ranged from 2 to 20, where higher scores represented higher perceived self-efficacy. The scale was originally with a high internal consistency reliability with a Cronbach's alpha coefficient of 0.85.[23] In this study, a high reliability with a Cronbach's alpha coefficient of 0.86 was obtained.

Data collection procedure

This study was approved by the Institutional Review Board (IRB) for Graduates Studies (approval no. 11-01-2560), Faculty of Nursing, Burapha University, Thailand. The researcher received the permission to collect the data from the Research Ethics Board of Health (REBH) (Ministry of Health of Bhutan), president of JDWNRH, and Head of Pediatric Department of JDWNRH, Bhutan.

The participants were recruited solely on a voluntary basis who met the inclusion criteria. After agreeing to participate in the study, parent's information sheets and informed consent were provided and consent were obtained. Data were collected daily from 9:00 am to 3:00 pm on weekdays and 9:00 am to 1:00 pm on Saturday. It took about 20 minutes to complete the questionnaires. The researcher checked and ensured that the questionnaires were filled completely. Once the questionnaires were completed, the researcher provided the participant an advice on childhood fever management.

Data analyses

Data were coded and analyzed by using a statistical software computer program. The significant level of alpha was set at 0.05. Descriptive statistics in terms of frequency, percentage, mean, standard deviation, and range were used to describe demographic characteristics, parental fever management in young children with fever, knowledge, attitudes, and perceived self-efficacy. Pearson's product

moment correlation coefficients were used to determine the relationships between parents' fever management and its associated factors which included parents' knowledge, attitudes, and perceived self-efficacy. Prior to data analysis, data were tested for normality and assumptions applicable for Pearson's product moment correlation analysis.

Results

Demographic characteristics of parents

A total of 80 Bhutanese parents with children aged 6 months to 5 years who met the inclusion criteria had completed the questionnaire. Socio-demographic characteristics of the participating parents are shown in Table 1. There were slightly more mothers than fathers (52.5% and 47.5%, respectively). The majority were in their 31 – 40 and 18 – 30 years of age (50.0% and 47.5%, respectively). Most parents completed secondary education (43.8%) followed by tertiary education (35.0%). It was found that 83.8% of parents had one child below five years of age. Most participants were married (96.2%). More than half of the parents were employed (71.2%).

Table 1 Demographic characteristics of the parents (N = 80).

Characteristics	N	%
Relationship with the child		
Mother	42	52.5
Father	38	47.5
Age of parents (years)		
18 – 30	38	47.5
31 – 40	40	50.0
41 or older	2	2.5
Number of children below five years of age		
1	67	83.8
2	10	12.4
3 or more	3	3.8
Education level		
Primary (1-6 grade)	12	15.0
Secondary (7-12 grade)	35	43.8
Tertiary (college and university)	28	35.0
Others (non-formal education)	5	6.2
Marital Status		
Married	77	96.2
Divorced	3	3.8
Occupation		
Employed	57	71.2
Not employed	16	20.0
Others (freelance, business, etc.)	7	8.8

Demographic characteristics of children

Among 80 children, there were more boys (57.5%) than girls (42.5%) (Table 2). The children had a mean age of 28.99 months. The majority were toddlers (43.8%), followed by preschoolers (35.0%), and infants (21.3%). For frequency of fever, the majority they fever for the first time (33.0 %), followed by the second time (31.3 %). The average mean temperature was 37.86 °C. More than half of the children had no fever (65.0 %) when recorded from axillary at the hospital.

Table 2 Demographic characteristics of children (N = 80).

Characteristics	N	%
Gender		
Boy	46	57.5
Girl	34	42.5
Age (months) (M = 28.99, SD = 17.23, range = 6-60)		
6-12 (infant)	17	21.2
13-36 (toddler)	35	43.8
37-60 (preschooler)	28	35.0
Number of fever in last 6 months		
1	27	33.7
2	25	31.3
3	15	18.7
4	4	5.0
5 or more	9	11.3
Child's temperature (M = 37.9 °C, SD = 1.60, range = 35.6-40.6)		
No fever (≤ 37.5°C)	52	65.0
Fever (> 37.5°C)	28	35.0
Position of temperature taken		
Axilla	28	35.0

Description of the study variables

The study results showed that parents' childhood fever management for their young children with fever had an overall mean score of 39.51 (SD = 5.59, range = 25 - 56). When considering each item, the first three items with the highest mean score were items 8, 13 and 12 (M = 4.04, 3.96 and 3.34, respectively). The first three lowest mean scores were found in items 6, 3 and 11 (M = 2.14, 2.62 and 2.66, respectively) (Table 3).

It was found that the average mean score of knowledge about fever management was 8.55 (SD = 1.88, range = 4 - 12) (Table 4). The first three items with the highest proportion of participants answering correctly were item 8 (95.0%), followed by item 10 (90.0%) and item 1 (88.8%). The three items with the lowest proportion were item 9 (25.0%), followed by item 12 (32.5%) and item 6 (38.8%).

Table 3 Mean, standard deviation, range and each item of childhood fever management (N = 80).

Parent childhood fever management		M	SD
Total score (possible range: 13 – 65; actual range: 25 - 56)		39.51	5.59
Individual item score (possible range: 1 – 5; actual range: 1 – 5 for all items)			
1.	I always measure child's temperature when he/she has fever	3.01	1.45
2.	I always give antipyretics (paracetamol) when he/she has fever	2.84	1.34
3.	I never wake my sleeping child to check his/her temperature during night	2.62	1.31
4.	I wake my child to give antipyretics (paracetamol) as needed during night	2.93	1.40
5.	I measure my child's temperature after tepid sponge / antipyretics (paracetamol)	2.90	1.47
6.	Whenever my child has fever, I take him/her to see a doctor immediately	2.14	1.31
7.	I manage my child with fever by giving antipyretics (paracetamol) only	2.89	1.36
8.	I make sure that my child drinks more water	4.04	1.00
9.	I give cold water sponging to my child whenever he/she has fever	2.83	1.48
10.	When my child has fever, I provide him/her with thick clothing and cover with blanket	3.09	1.64
11.	I don't allow my child to play or do exercise when he/she has fever	2.66	1.47
12.	When my child has fever, I feed my child with soft diet which can be easily digest	3.34	1.39
13.	I allow my child to rest more than normal	3.96	1.08

Table 4 Frequency, percentage, mean, standard deviation, range and each item for parents' knowledge (N= 80).

Knowledge		Correct answer, n (%)
Total score possible range: 0 – 12; actual range: 4 – 12; mean = 8.55, SD = 1.88		
Item score		
1.	Normal body temperature is 37.0 °C/98.6 °F	71 (88.8)
2.	The body temperature above 37.5°C/ 99.5°F is consider as fever in child	65 (81.2)
3.	Appropriate place to measure child's body temperature is at axilla (armpit)	68 (85.0)
4.	Infection is the only cause of fever in child*	46 (57.5)
5.	Child with high fever is risk for developing febrile convulsion	70 (87.5)
6.	Antipyretics is the best for reducing fever in my child*	31 (38.8)
7.	Reducing a room's temperature by opening a window will be effective to reduce the temperature and improve child comfort	67 (83.8)
8.	Excess or thick clothing should be removed when child has fever	76 (95.0)
9.	Cold water sponge should be used when child has a fever*	20 (25.0)
10.	Providing adequate fluid to drink will prevent dehydration when child suffer from fever	72 (90.0)
11.	Allowing child to rest more than normal will reduce metabolic demands	68 (85.0)
12.	Child should be taken to doctor immediately when child has a fever*	26 (32.5)

* Negative items.

The mean score of parents' attitudes towards fever management was 37.89 (SD = 6.20, actual range = 28 - 56). Items 4, 8 and 12 had the highest score (M = 4.34, 3.98 and 3.84, 1.15 respectively). The three items with the lowest mean score were items 9, 5 and 10 (M = 2.46, 2.60 and 2.61, respectively).

Table 5 Mean, standard deviation, range and each item for parents' attitudes (N = 80).

Attitude		M	SD
Total score (possible range: 12 – 60; actual range: 28 – 56)		37.89	6.20
Item score (possible range: 1 – 5; actual range: 1 – 5 for all items)			
1.	I think fever is very harmful to my child	2.85	1.41
2.	I feel a fever from common cold, it should not cause of worry to parents	3.11	1.08
3.	I feel infection only make my child have fever	2.80	1.17
4.	I prefer child's clothing or blanket to be removed when my child has fever	4.34	1.08
5.	I prefer giving cold water sponging to reduce my child's fever	2.60	1.56
6.	I prefer to wake my child frequently to check temperature during night	3.00	1.24
7.	I feel giving antipyretic is the best for reducing fever	2.80	1.15
8.	I prefer giving tepid sponge to make my child comfortable	3.98	.89
9.	I prefer to take my child to see doctor every time when he/she has fever	2.46	1.45
10.	I don't prefer vaccination because it can be a cause of fever in my child	2.61	1.26
11.	I feel if my child has high fever, he/she will get febrile convulsion	3.58	1.05
12.	I prefer my child to drink more water to decrease his/her fever	3.84	1.15

The average score of parents' perceived self-efficacy about childhood fever management was 13.4 (SD = 3.50, actual range = 4 - 20) (Table 6). For the individual items, we found a mean score of 6.55 (SD = 1.70) for item 1 "Do you think you know how to manage your child when he/she has fever?" and of 6.85 (SD = 2.01) for item 2 "Do you think you can decide what to do when your child has fever?"

Table 6 Mean, standard deviation, range and each item for parents perceived self-efficacy (N = 80).

Self-efficacy		M	SD
Total score (possible range: 2 – 20; actual range: 4 – 20)		13.4	3.5
Item score (possible range: 1 – 10; actual range: 1 – 10 for both items)			
1.	Do you think you know how to manage your child when he/she has fever?	6.55	1.70
2.	Do you think you can decide what to do when your child has fever?	6.85	2.01

Relationships between parents' knowledge, attitudes, perceived self-efficacy and parents' childhood fever management

All assumptions for Pearson's correlation coefficient analysis for all variables including parents' childhood fever management, and parents' knowledge, attitudes, and perceived self-efficacy were met. It was found that that there were significant positive correlations between parents' childhood fever management and parents' knowledge, attitudes, and perceived self-efficacy and (r = 0.28, 0.24 and 0.24, respectively, P-value < 0.05 for all) (Table 7).

Table 7 Relationships between parents' knowledge, attitudes, perceived self-efficacy, and parents' childhood fever management (N = 80).

Variables	Parents childhood fever management (r)*	*P*-value
Knowledge	0.28	0.01
Attitudes	0.24	0.03
Perceived self-efficacy	0.24	0.03

* Pearson's product moment correlation.

Discussions and Conclusion

Parents' childhood fever management in this study was assessed based on 13 items representing activities which most parents are likely to carry out while their young children have fever. Total mean score of parents' childhood fever management was 39.51 (*SD* = 5.59) on a score range of 13 - 65 on the 5-point Likert-type scale. Based on this score, Bhutanese parents practiced moderately appropriate childhood fever management.

These moderate fever management practices in this study could be explained by several reasons. It was possible that most of the parents had graduated from secondary and tertiary level of education (Table 1). They would manage their child's fever in line with evidence-based practices. Generally, higher level of education helps people to learn and understand the content more easily. Furthermore, it enables them to seek the source of knowledge and gather information from various sources, and guide them in application of the knowledge in effective ways. This can be supported by a previous study, that higher level of education has been associated with appropriate fever management practices among caregivers.[1] Another likely reason could be from parents' occupation. In this study most parents were employed (71.2%) and all of them were residing in the capital city and had access to the biggest national referral hospital in the country which has the best access to the available resource. This might have helped parents to practice the fever management as suggested by the guideline provided by the hospital. This can be supported by previous studies that most parents learned to manage fever from healthcare professionals and they trusted the information from health professionals the most.[19,40] Furthermore, since most parents were employed, they might have easy and convenient access to internet facilities in their work place or from internet cafe nearby. Thus, Bhutanese parents might have learned and improved their fever management practice from websites. A previous study also found that parents received information about fever management in children, mostly through the internet (63.4%).[26]

Regarding each aspect of fever management practice, the finding showed that the parents' practice was based on evidence management. Majority of parents made sure that their child drank more water when having fever. This is consistent with previous study findings. For example, parents ensured adequate fluid intake to decrease discomfort in children with fever.[14] Parents also followed fever management recommendation guidelines such as encouraging their child to drink more fluid, or breast milk for breastfed child, to prevent dehydration.[3,38] Furthermore, most parents allowed their child to rest more when they had, which is also congruent with the literature which proved that bed rest reduces metabolic and oxygen demand, thereby avoiding excessive fatigue during febrile illness.[9] Similarly, most parents reported that they fed their child with soft diet which could be easily digested. This is also in line with the literature stating that soft diet helps the child gain energy and feel less fatigue when body's requirement needs are met during illness.[39]

This study also revealed that Bhutanese parents practiced non-evidence based activity. For example, majority of parents took their child to see the doctor immediately, whenever the child had fever. This was consistent with previous studies of inappropriate fever management among caregivers who took the child with fever to see the doctor.[19,27,41] This could be explained by the fact that parents may have a misconception that fever is harmful to their child and this fear about fever might have compelled them to take

a prompt action. A recent qualitative study by Tafti, Salmani and Afshari (2017)[42] revealed that one of the management most mothers adopted was to seek medical attention in effort to control the child's fever. In addition, most parents in our study reported that they managed the child's fever by giving cold water sponging. This practice suggested a non-evidence-based management among Bhutanese parents. This result is consistent with previous similar study where most parents used cold water sponge to treat fever in their children.[20] This practice is not recommended since cold water sponging might cause adverse effects such as paradoxically increased fever, shaking, shivering, severe hypoglycemia, or even coma.[3,15]

The main objective of this present study was to determine the relationships between childhood fever management and knowledge, attitudes, and perceived self-efficacy of the parent. As hypothesized, childhood fever management was significantly and positively correlated with knowledge, attitudes, and perceived self-efficacy. The details are as follows. The present study showed that knowledge had a significantly positive relationship with parents' childhood fever management (r = 0.28, *P*-value < 0.05). It means that when Bhutanese parents had high knowledge about fever management in young children, they would have more appropriate fever management, and vice versa. This positive relationship between knowledge and appropriate fever management could be explained by the fact that most parents correctly reported evidence-based information such as removing thick clothing and providing adequate fluid to prevent dehydration when their child had fever. This practice was recommended by fever management guidelines for children under five years old.[3,15] This recommendation has been stated in literature pertaining to appropriate method of fever management in children.[43,44] Our result is also consistent with previous studies that parents encouraged children to drink more fluid during febrile illness .[14,18] Additionally, most parents were aware of correct knowledge of normal body temperature (37.0°C) and fever temperature (> 37.5°), which is in consistent with the literature.[3,9] Furthermore, most parents were correctly responded that febrile convulsion is associated with high fever. This finding is in accordance with the literature that the strong correlation has been identified between febrile convulsion and the height of fever.[9] Similar result was revealed in a previous study among Australian parents.[14] In this study, most parents reported the correct answer on allowing the child to rest more than normal will reduce metabolic demands. This finding is in line with the recommendation for parents taking care of young children with fever. This is because the mean increase in metabolism is between 10% and 13% for every 1 °C rise in temperature.[7,9] Theoretically, knowledge determines the person's action as supported by Walsh (2008)[14] that parents' knowledge determines the appropriate fever management in children. This is supported by previous study among Korean parents that there was statistically significant positive correlation between knowledge and fever management (r = 0.28, *P*-value = 0.008).[23] Another similar study among 112 mothers with children between 1 and 6 years of age also revealed that there was a positive relationship between knowledge and practice.[45] The recent intervention study by Chang, Guo and Huang (2016),[46] proved that parents who received fever knowledge had improved fever management skill and behaviors at the post-test assessment. This evidence-based knowledge among parents in Bhutan confirmed that there was a significant positive relationship between knowledge and childhood fever management.

The present study revealed that parents' attitudes had a significant positive relationship with childhood fever management (r = 0.24, *P*-value <.05). It means that when Bhutanese parents had a positive attitude about fever management in young children, they would have more appropriate fever management. The positive relationship between attitudes and childhood fever management might be explained by several possible reasons. Most participants were married and spouse of those Bhutanese parents who participated in this study would have shared the concern and protective role of the parents. The positive attitudes in parents towards fever management might have come from the perceived sense of responsibility towards children and appreciation from their spouse.[19] Another explanation might be from the parents' experiences when caring for their non-compliant children. For example the child could have refused medication but did not encounter harmful outcome of fever. As a result, the parents' attitudes were more evidence-based indicating positive influences from experiences. Thus, personal experience with non-compliant children became a strong contributor to the positive attitude change.[19] Furthermore, theoretically an attitude determines the person's action, as supported by Walsh (2008)[14] that the

parents' attitudes determine the appropriate fever management in children. Furthermore, Walsh explained that some parents' attitudes towards fever management has changed over time because of either positive or negative experiences with fever indicating more positive or negative attitudes towards fever. It can be concluded that attitudes had a positive relationship with appropriate childhood fever management.

The present study revealed that parents' perceived self-efficacy had a significantly positive relationship with parents' childhood fever management ($r = 0.24$, P-value < 0.05). It means that when Bhutanese parents had high perceived self-efficacy about fever management, they would have more confidence in caring for their young children with fever more appropriately. The explanation might come from the other finding in this study. According to parents' age range, 50% of the parents were in their adulthood (31 - 40 years). Theoretically, when individual gets older, self-efficacy increases and the parent confidently responds with child rearing and care task.[32] This is further supported by a study that mother's age had positive correlation with perceived self-efficacy in caring for children when sick.[22] Another likely reason might be that Bandura (1989)[47] described that people's beliefs about perceived self-efficacy are influenced by how they construct situation and types of anticipatory scenarios and visualized futures they construct. A previous study proved that almost all parents reported being confident in their ability to take their child's temperature and assess their child's drinking when taking care of their ill child, and they accomplished the task which they desired to provide.[33] Self-efficacy is one factor in promoting parenting strength because self-efficacy is the anticipation that a person can cope with and will be successful in dealing with specific tasks.[48] Theoretically, self-efficacy means a person's belief in his/her ability to perform a task or obtain a goal.[32] This is consistent with a previous study that self-efficacy was positively correlated with fever management among Korean parents.[23] The parents with high perceived self-efficacy had achieved appropriate fever management in young children.[23] Similarly, the recent study among asthma children showed a relationship between high parental self-efficacy and successful asthma management.[34] Thus, perceived self-efficacy was a significant positive influencing factor to childhood fever management among Bhutanese parents.

In terms of implications, the results of this study could provide the pediatric nurses an understanding and basic information about parents' childhood fever management among Bhutanese parents. The study information could be utilized to develop action or intervention strategy to enhance parents fever management especially in the case of inappropriate fever management. For example, a poor practice of giving cold water sponging to reduce fever in their child. The care should focus on over all comfort of the child such as giving adequate to drink and allowing child to rest more. Furthermore, nurses can also promote and encourage the parents to achieve a higher and better level of self-efficacy to accomplish the tasks of managing their children with fever.

In terms of limitations, since the study sample was a convenience sample, generalizability might be limited to some parents with distinct characteristics and setting. Most questionnaires, except one, were newly developed tools by the researchers. These scales need to be further tested. In addition, predictive studies to establish the causal relationship are also needed. Future research should be carried out with a larger sample size with different age groups, first time parents, and in different study settings. Furthermore, studies focusing mother and father separately should conducted.

In conclusion, the study examined the relationship between influencing factors and parents' childhood fever management in one of the referral hospital, Bhutan. Parents fever management was in a moderate level. The influencing factors, including knowledge, attitudes, and perceived self-efficacy were positively correlated with childhood fever management. The study findings confirmed the importance of enhancing the factors that promote effective and evidence-based childhood fever management and better health outcome of the children. Understanding these factors will help health professionals especially pediatric nurses to provide knowledge, skills and resources necessary to promote appropriate fever management among Bhutanese parents.

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