Effect of Nursing Educational Sessions about Fever on Knowledge and Practices of Mothers at Pediatric Surgical Unit

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Abstract

Background: elevation of body temperature is common in postoperative children as an inflammatory reaction to surgical incision prompts the mothers need for support by proper knowledge and practice. Aim the aim was to evaluate the effect of nursing educational sessions about fever on the knowledge and practices of mothers at the pediatric surgical unit. Design one group pre-posttest quasi-experimental research design Sample: A convenience sample of 100 mothers of children admitted to the pediatric surgical unit in Cairo University Specialized Pediatric Hospital for 6 months. Setting: the study conducted at Cairo University Specialized Pediatric Hospital (CUSPH) in the right side of pediatric surgical unit on the fourth floor. Tools: Structured interview questionnaire, observational checklists for axillary temperature, and cold compressors developed by the researcher. Results: there were a statistically significance difference between the total mean scores of mothers' knowledge and practice before and after the educational sessions and at the time of discharge. Also, there was a statistically significant correlation between mothers' knowledge and level of education and place of residence in addition to significant statistical correlation between mothers' axillary temperature practice and level of education. Conclusion: the current study concluded that mothers who receive nursing educational sessions about fever have a higher mean score of knowledge and practice than before. Recommendations: emphasize the importance of education provided for mothers including knowledge and practice to improve their knowledge and performance regarding fever care.

Key words: mothers, educational sessions, pediatric surgery, fever, knowledge, practices, children, nursing.

Introduction

Fever is described as an increase in setpoint that causes a higher level of regulation of body temperature; it may be arbitrarily defined as a temperature above 38 °C (100.4 °F) (Hockenberry, Wilson, & Wong, 2017). Pediatricians and other medical professionals most frequently encounter fever-related issues with young patients. Fever accounts for up to one-third of all pediatrician visits for kids, and it is the main reason for emergency room visits for kids under 15 years old (Urbane et al., 2019). Pediatric surgical populations frequently experience postoperative fever, which is rarely caused by an infectious source (Corkum et al., 2018).

Moreover, an increase in body temperature that is greater than the average daily variation or a defensive reaction to the introduction of pathogenic agents into the body might cause an increase in body core temperature. Fever is defined in routine clinical practice as a brief increase in the body's thermoregulatory set-point in the posterior hypothalamus of the brain that is 1° C (1.8°F) or higher than the mean temperature at the site of recording (for example, the mean axillary temperature is 36.4°C, but fever is (37.4°C) (Balli & Sharan, 2021)

Postoperative fever is frequently anticipated as an inflammatory reaction to surgery and typically does not require treatment, but infectious sources must be cleared out or the outcome can be disastrous (Rajni, 2019). When determining the source of a fever, timing is a crucial factor. As infectious and non-infectious fevers both have a similar pattern of occurrence, it is crucial to conduct thorough investigations to determine Comprehensive the cause. investigations are necessary, and knowing the likely cause greatly aids doctors in reducing costs and treatment alternatives through goaldirected action (Abdelmaseeh, Azmat, & Oliver, 2021).

Children who had a reported high temperature during a hospital visit were more likely to get testing, but they weren't more likely to have good results. Most pediatric patients were more likely to have an infectious cause of their early postoperative fever if they had an indwelling central venous or urine catheter at the time of surgery (Corkum et al., 2018).

Dewitt et al., (2017) emphasized the significance of keeping in mind that pyrogens are not always infectious and that several non-infectious etiologies can produce or act as pyrogens. The United Kingdom (2021) documented that fever in young infants can be a diagnostic problem for healthcare providers because it is frequently difficult to determine the reason, according to the National Institute for Health and Care Excellence (NICE) educational programs.

In a study aimed to ascertain the prevalence of fever in 6943 kids during the postoperative phase, Corkum et al. (2018) found that 30.6% of kids experienced early postoperative fever (>38.0 °C). In a similar vein, Yousef, Dranginis, and Rosenfeld (2018) in their study aimed to evaluate the frequency of postoperative fever in paediatric patients; concluded that fever during the postoperative stay is a frequent occurrence and frequently prompts extensive diagnostic workup which increases the cost and burden on the health system but has unclear effects on the care of the patient.

In the same vein, Obana, et al. (2020) observed that postoperative fever is common but not a risk factor for infection in their retrospective investigation on 222 children about the incidence of postoperative fever. Postoperative fever, however, neither raises the chance of infection nor indicates when it will occur. They also discuss the link between prophylactic antipyretic use and the prevalence of fever in their group.

Every surgical floor sees a recurring occurrence of postoperative fever. Fever can have many different causes, so a multidisciplinary team of healthcare specialists usually handles this issue. To determine the cause, the nurse should first examine the wound site, auscultate the lungs, and test for deep vein thrombosis. The nurse is probably the first one to observe the child and notice the fever. Additional potential causes of postoperative fever include sepsis, thrombophlebitis, and urinary tract infections. The workup is determined by the patient's presentation and the day of the fever after the fever has been noticed and reported to the healthcare professional (Abdelmaseeh, Azmat, & Oliver, 2021).

According to a recent study by Ward, Edwards, and Torchia (2021), there is inconsistency among strategies that are not therapeutic, economical, or evidence-based in the literature on managing fever in children. Inaccurate information in the media and on the Internet, knowledge gaps, false beliefs, and parental fear are all obstacles to appropriate management. Nonetheless, parents - especially mothers - experience intense concern when their children have fevers.

Evidence-based educational programs, which should be used by parents and medical professionals alike, provide the best and safest ways to treat fever in children. While incorporating parents in the care of their children improves their relationship with the medical team and supports an appropriate use of health resources, health professionals, especially nurses, play a significant role in educating parents on self-care skills (Chang & Huang, 2021).

Significance of the study:

Despite meticulous examination, a sizable portion of kids suffer fevers with no apparent explanation. Between 20% and 40% of parents report their child having a fever each year (National Institute for Health and Care Excellence United Kingdom, 2020), making feverish illnesses quite prevalent in young children. About 90% of postoperative cases involving surgical procedures result in fever as a reaction to injury, including surgical incisions and inflammatory processes (Abdelmaseeh, Azmat and Oliver, 2022) It was discovered through the researcher's clinical work in the pediatric surgical unit and empirical observation that the majority of youngsters experience postoperative fever. Also, mothers of children in the surgical unit's primary complaint were fever. Most mothers just examined their infants by feeling them before reporting, even if the fever wasn't confirmed by an accurate method of measurement. Concern and irritation in the mothers of the reported patients in the surgical unit were seen.

So, the current study's goal is to assess how mothers at the pediatric surgical unit's knowledge and practices have changed as a result of nurse education sessions about fever. Hopefully, the results of the current study will help to improve mothers' knowledge and practices regarding the care of their children with fever in the postoperative period.

Aim of the study

The study aimed to evaluate the effect of nursing educational sessions about fever on the knowledge and practices of mothers at the pediatric surgical unit.

Research hypotheses:

- **H1:** Mothers who receive the nursing educational sessions about fever will have a higher mean score of knowledge than before.
- **H2:** Mothers who receive nursing educational sessions about fever will have a higher mean score of practice than before.

Research design:

One group pre-posttest quasiexperimental research design utilized to achieve the aim of the current study. A quasiexperimental design is one type of experimental design that is very similar to the true experimental design except it lacks one criterion as randomization or control (Gray et al., 2019).

Setting:

The study conducted at Cairo University Specialized Pediatric Hospital (CUSPH) in the right side of pediatric surgical unit at the fourth floor which composed of 2 parts of inpatient the left part receives orthopedic, renal and central nervous system surgeries the right part for gastrointestinal and plastic surgeries which contain 5 rooms 2 with one bed in each room and other 3 rooms with 3 beds and 1 room with 6 beds.

Sample:

A convenience sample of 100 mothers of children admitted to the pediatric surgical unit in CUSPH were included in the study. All mothers were included in the study regardless of their age, or their children's age, their educational level.

The number of participants calculated based on the following formula.

(http://www.ifad.org/gender/tools/hfs/ anthropometry).

$$\frac{\Gamma^2 \ge p(1-p)}{m^2} =$$

Description:

n

 \mathbf{n} = required sample size.

 $\mathbf{n} =$

 \mathbf{t} = confidence level at 95% (standard value of 1.96).

p = estimated prevalence mothers of children admitted for surgery 2020 at CUSPH = 220) **m** = margin of error at 5% (standard value of 0.05).

$$=\frac{(1.96)^2 x \ 220 \ (1-220)}{(0.05)^2}=74.035$$

Data collection tools:

The required tools were developed by the researcher after reviewing the related literature through the following tools:

1- Structured interview questionnaire: it is developed by the researcher and composed of three parts:

Part I: It involves (6 items) personal data about the mother and her child (age, level of education, occupation, place of residence, and her child's age, gender, rank in the family, and number of children).

Part II: It contains 12 items related to data about child history (child's admission

history, period spent at hospital, if the child suffers from fever, how the mother responds to fever, if the child had any complication from fever).

Part III: It involves 10 items to collect data about mothers' knowledge and reported practice regarding fever in children in the postoperative period at hospital (definition, impression of mother about fever seriousness, if mothers consider fever as a disease, how mother respond, causes, symptoms, fever-reducing measures in children, possible complication, measurement of temperature).

Scoring system:

To score the mothers' knowledge each complete response took "2" scores; the incomplete one take "1" scores, and the wrong answer or not known take zero. The total score converted to 100% and then categorized. If the total score of less than 60% considered inadequate, while a score of 60% and more considered adequate.so mothers who got 6 and more out of 10 was considered adequate level of knowledge.

- 2- Observational Checklists: To evaluate the mothers' practical skills of care about fever among their children in the postoperative period. It is adapted from Bowden, and Greenberg (2016), and it was modified and simplified by the researcher to fit the capabilities of the mothers. Observational checklists encompass 2 lists of procedures about measuring axillary temperature (12 items) and cold compresses (10 items)
- **3-** Scoring System: To score the observation checklists; each correctly performed step (done) gets a "1" score, and the wrong step or not performed step (not done) get zero. The total score converted to 100% and then categorized inadequate if the total score was less than 70%, while a score of 70% and more considered adequate. So, in measuring axillary temperature the mother who got 8.4 and higher out of 12 considered adequate practice regarding cold compresses

mothers who got 7 and higher out of 10 considered adequate practice.

Validity and reliability:

Content validity:

Tool (1,2) was developed by the research after extensive review of the related recent literature. The content of the data collection tool was submitted to a panel of five experts in the field of pediatric nursing to test the content validity. Modifications of the tool were done according to the panel judgment on clarity of sentences, appropriateness of content and sequence of items.

Reliability of the tool 1 the internal consistency was measured to identify the extent to which the items of tools measure the same concept and correlate with each other. Internal consistency estimate's reliability by grouping questions in a questionnaire that measure the same concept. One common way of computing correlation value among the question instruments is by using Cronbach's alpha. Regarding the reliability of this study tool coefficient alpha of questionnaire sheet was 0.65.

Reliability of tool (2) the internal consistency was measured to identify the extent to which the items of tools measure the same concept and correlate with each other. Internal consistency estimate's reliability by grouping questions in a questionnaire that measure the same concept. One common way of computing correlation value among the question instruments is by using Cronbach's alpha. Regarding the reliability of this study tool coefficient alpha of questionnaire sheet was 0.65.

Nursing educational sessions:

In the current study, the nursing educational sessions include all nursing activities or interventions related to care of fever in children planned and designed by the researcher after an extensive review of related literature. The nursing educational sessions include knowledge about fever in children and its common causes, symptoms, complications, and fever reduction measures. In addition to providing educational sessions

improve the practice of mothers to concerning measures to reduce fever in children. measurements of axillarv temperature, and application of cold compresses. The nursing educational sessions presented in the form of educational materials such as an illustrated Arabic booklet developed by the researcher, educational videos, posters, and demonstrations, and redemonstration.

Data collection procedure:

Official permission was obtained from the director of CUSPH and the head of the pediatric surgery unit. The purpose and nature of the study was explained to each mother individually in their bedside area and then a written consent obtained from each mother to get her acceptance as well as to gain her cooperation.

Personal data from the mothers and their children collected using (tool 1, parts 1 & 2) on an individual basis at their bedside area in the day of admission. Assessment of mothers' knowledge utilizing (tool 1, part 3) as a pretest. Evaluation done using observational checklists (tool 2) as a pre-test of mothers' practical skills by asking the mother to measure the axillary temperature and perform cold compresses on a doll. Mothers demonstrate the steps of axillary temperature to their children in the pediatric inpatient surgery unit and cold compresses on a doll.

The nursing educational sessions explained to the mothers on the second day in the waiting room in the pediatric surgery unit through 4 educational sessions (2 theoretical and 2 practical sessions). Each session takes about 30-45 minutes on an individual basis and sometimes for a group of 2-5 mothers. The theoretical session (1) in the 2^{nd} day with breaktime of 1-2 hours between first and second session; the first nursing educational session encompass knowledge related to fever and its common causes: causes of fever in children after surgeries; symptoms, warning signs, and complications of fever in children; and continue after 1-2 hour in the same day the second educational session (2) targeted general measures to reduce fever in children. The care that should be provided by mothers for children with fever in the postoperative period addressed. The sessions were conducted using an illustrated Arabic booklet, pictures about sites of cold compresses, videos care provided in case of fever and PowerPoint presentation by the research investigator illustrating all knowledge in points.

Immediately after implementation of the sessions of the nursing education, the knowledge of the mothers as well as their practice assessed as a post-test (1) using (tool 1, part 3) and assessed again at the time of discharge as a post-test (2).

As regards the first practical sessions, on the third day with breaktime of about 2 hours between the two sessions; the first practical session with mothers focused on how to measure axillary temperature. The second practical session emphasized the procedure of cold compresses. The two practical sessions demonstrated by were the research investigator using a doll and other realistic and virtual computer-based materials and videos. The practical sessions were validated by re-demonstration for the mothers (two times).

Mothers' practical skills (axillary temperature and cold compresses) were evaluated as a post-test (1) using (tools 2) immediately after the two practical sessions and another time at the time of discharge as a posttest (2).

Ethical considerations:

Approval obtained from the research ethics committee in the Faculty of Nursing, Cairo University. Written informed consent obtained from the mothers of children after a complete description of the purpose and nature of the study. Mothers informed that participation in the study is voluntary; mothers have the right to withdraw from the study at any time without giving any reason and without any effect on the care of their children. Confidentiality assured for each mother.

Statistical analysis:

A compatible personal computer (PC) used to store and analyze data. The Statistical Package for Social Studies (SPSS), version 21.0, used. Data coded and summarized using mean, standard deviation, and crosstabs for quantitative variables and percent for qualitative variables. A comparison between qualitative variables carried out using the parametric Chi-square test. A comparison of means performed using a paired-sample t-test. Correlation among variables done using the Pearson correlation coefficient. The level of significance at p 0.05, 0.001 is used as the cut-off value for statistical significance.

Results:

Figure (1) showed that more than half (53 %) of mothers' age were 30 to less than 40 years old followed by more than two fifth (45 %) of them were between 20 to less than 30 while just two of them were less than 20 years old.

Figure (2) illustrated that about three fifths of children were male while two fifths were females.

Figure (3) showed that more than half of children (55%) have a history of hospital admission.

Figure (4) the majority of mothers (92%) stated that their children experience fever before.

Table (1) regarding education, about two fifths (36 %) of mothers were secondary school graduates and about one fifth (17 %) of them just read and write. Concerning occupation, majority of mothers (89 %) were housewives, and more than half (54%) live in rural areas.

Table (2) showed that most children were less than 5 years old with a meaning of 2 years old (x^{-2} 24.9). About two fifths were the fourth child of the family.

Table (3) showed that more than one third of them have been admitted twice. Approximately one third of mothers do nothing as a response to fever while more than two fifths give medication without description while just one fifth seek physician help. Regarding the complication of fever, no mother reports any incidence of complications from fever. Concerning the source of mothers' knowledge about fever care, more than one third of mothers (33%) mentioned that their source is their relatives followed by media as a source of knowledge.

Table (4) proved that most mothers had inadequate level of knowledge with mean score of (4.080 ± 1.307) and vast majority of them had adequate level of knowledge immediately after educational session (6.870 ± 1.186) also majority of them had adequate level of knowledge at time of discharge $(6.310 \pm .991)$. There was a statistically significance difference between their knowledge level before and immediate and at discharge time.

Table (5) concluded that all mothers had inadequate level of practice of axillary measurement before educational session (2.280 \pm 1.378) while majority had adequate level of practice immediately after practical sessions (8.720 \pm .954) and half of them had the adequate level of practice at time of discharge (8.340 \pm .867). And there was a statistically significance difference in the level of practice among mothers before, immediately and at time of discharge.

Table (6) illustrated that all mothers had an inadequate level of practice of cold compressors before clinical sessions $(2.270 \pm .446)$ while majority of them had adequate level of practice of cold compressors immediately after clinical session (7.090 + .533), majority had adequate level of practice at time of discharge (6.770 + .5290) from hospital.

Table (7) showed that There was a statistically significant correlation between mothers' total mean score of knowledge and educational level and residency at the time of discharge.

Table (8) revealed that There was a statistically significant correlation between total mean score of mothers' practice of axillary temperature and educational level in the first time and immediately after educational sessions and at the time of discharge.

There was a statistically significant correlation between total mean score of mothers' practice of axillary temperature and residency at the first time.

Table (9) showed that there was no statistically significant correlation between mothers' practice of cold compressor and any of their personal data.

Table (1):	Percentage	distribution	of mothers'	age (n=100)
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Mothers' personal data		
	No	%
Educational level:		
can't read and write	13	13
read and write	17	17
primary school	2	2
Prep school	17	17
secondary	36	36
university	15	15
Occupation:		
Working	11	11
Housewife	89	89
Residency:		
Rural	54	54
Urban	46	46



Figure (1): percentage distribution of mothers' age with Mean \pm Stander Deviation of $29 \pm 4.97.(n=100)$.

Table (2): Percentage	distribution of children	personal data (n=100).
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Children personal data	No	%
Children' age per months		
< 12	35	35
12 < 60	57	57
60 < 120	8	8
mean ± SD	24.9 ± 21.32	
Children' order:		
First	18	18
Second	26	26
Third	20	20
Fourth or more	36	36



Figure (2): Percentage distribution of children gender n = 100.

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Admission history	No	%
Numbers of previous admission n= 55		
Once	37	67.3
Twice	18	32.7
Mothers' action n = 92		
Nothing	28	30.4
Gives medication	42	45.6
Seeking physician help	20	21.7
Others as cold compresses	2	2.2
Complications from fever		
No	100	100
Yes	0	0
Source of mothers' knowledge		
media	28	28
relatives	33	33
physician	10	10
Others as past experiences	29	29







Figure (4) Percentage distribution of children previous experience fever

 Table (4): Comparison of mothers' total mean scores regarding knowledge before and immediately after and at the discharge of mothers n= 100

Mothers' knowledge before educational session	No	%	Т	Р			
adequate	12	12	31.194	.000			
inadequate	88	88					
Mean <u>+</u> SD		4.080) <u>+</u> 1.307				
Mothers' knowledge immediately after educational sessi	on						
adequate	90	90	57.914	.000			
inadequate	10	10					
Mean <u>+</u> SD		6.870) <u>+</u> 1.186				
Mothers' knowledge at discharge time from hospital							
adequate	84	84	63.619	.003			
inadequate	16	16					
Mean + SD		6.31	0 + .991				

* By paired sample T-test there were no statistically significance differences between mothers total mean scores in immediate and discharge time while there difference were highly significant between first and immediate and time of discharge.

Table (5): Comparison of mothers' total mean scores regarding practice of axillary temperaturen = 100.

Mothers' practice before educational session	No	%	Т	Р		
adequate	0	0	16.538	.000		
inadequate	100	100				
Mean \pm SD		2.280 ± 1.378				
Mothers' practice immediately after educational ses	fothers' practice immediately after educational session					
adequate	71	71	91.375	.000		
inadequate	29	29				
Mean \pm SD	8.720 <u>+</u> .954					
Mothers' practice at discharge from hospital						
adequate	51	51	96.179	.000		
inadequate	49	49				
Mean + SD	8.340 + .867					

* By paired sample T-test there were no statistically significance differences between mothers total mean scores in immediate and discharge time while there difference were highly significant between first and immediate and time of discharge.

 Table (6): Comparison between mothers' total mean scores regarding practice of cold compressors n= 100

Mothers' practice before clinical session	No	%	Т	Р		
adequate	0	0	50.874	000		
inadequate	100	100	50.874	.000		
Mean \pm SD		2.270 -	70 <u>+</u> .446			
Mothers' practice immediately after clinical session	1					
adequate	90	90	122.967	000		
inadequate	10	10	152.807	.000		
Mean <u>+</u> SD	7.090 + .533					
Mothers' practice at discharge from hospital						
adequate	74	74	127.064	000		
inadequate	26	26	127.904	.000		
Mean + SD	6.770 + .5290					

* By paired sample T-test there were no statistically significance differences between mothers total mean scores in immediate and discharge time while there difference were highly significant between first and immediate and time of discharge.

 Table (7): Correlation between mothers' total mean score of knowledge and educational level and residency at the time of discharge. n = 100

		Tot	al mean score	of mothers' kn	mothers' knowledge					
Mothers' personal data	At first	time	Immediately after educational session		At discharge time					
	р	r	р	r	р	r				
Age	.053	.522	.071	.708	.053	.526				
Educational level	.119	1.190	.053	.530	.020*	.196				
Residency	.153	1.534	.050	.298	0.035*	.347				
Working status	.031	.312	.067	.664	.066	.657				

 Table (8): Correlation between total mean score of mothers' practice of axillary temperature and educational level in the first time and immediately after educational sessions

	Tota	Total mean score of mothers' practice of axillary temperature					
Mothers' personal data	At fir	st time	Immediately after educational session		At discharge time		
	р	r	p r		р	r	
Age	.056	594	.149	-1.489	.085	845	
Educational level	.020*	.194	.016*	.156	.047*	.469	
Residency	.046*	.452	.061	.604	.062	.613	
Working status	.165	1.656	.065	.641	.057	.566	

 Table (9): Correlation between mothers' practice of cold compressor and any of their personal data. (n= 100).

	Tot	Total mean score of mothers' practice of cold compressor						
Mothers' personal data	At fi	rst time	Immediately after educational session		At discharge time			
	р	r	р	r	р	r		
Age	.158	-1.558	.084	869	.087	867		
Educational level	.121	1.209	.062	.610	.072	.719		
Residency	.161	1.610	.098	.978	.090	.891		
Working status	.121	1.209	.063	.622	.093	.924		

Discussion:

This discussion includes a comparison of the results of the current study with other recent and relevant studies as well as the researcher's interpretation of some results. The aim of the current study was to evaluate the effect of nursing educational sessions about fever on the knowledge and practices of mothers at the pediatric surgical unit.

Chang and Huang, (2021) recommended to reduce the prevalence of parental misunderstandings about childhood fever, it is important to implement supportable education programs since parental worry might arise when parents are unaware of their children's problem. So, the current study' educational sessions for mothers about fever helped them to be equipped with the knowledge and skills they need to provide the best possible care for their children' fever in the postoperative period which was clear in the difference noticed in levels of performance before and after receiving educational sessions.

The current study revealed that more than half of mothers' age was 30 to less than 40 years old, this result agrees with a study conducted on Egyptian mothers (Mohamed, Taha, Khaled, & Mahmoud, 2019) who studied effect of nursing educational sessions on knowledge and practice of mothers having children with leukemia; they stated that two fifths of mothers their age ranged from 30 to 35 years. As most of children admitted in the surgical unit for congenital anomalies repair this may reflect that most mothers' age is suitable for marriage and pregnancy so the relation between mothers age and congenital anomalies was not represented in the current study.

Regarding level of education, about two fifths of mothers were secondary school graduates' level of education and about one fifth of them just read and write this result in accordance with Mohamed et, al., 2019 who found that about two fifths had secondary school education. This may reflect the need of our population for more encouragement concerning continued education for women. Concerning occupation, majority of mothers were housewives and more than half live in rural areas. This result agrees with Mohamed et. al., (2019) who found that 84% of the mothers were housewives. Also, a study conducted on Turkey, 2023 about evaluating mothers knowledge regarding fever stated that majority of mothers were housewives (Boran & Kahriman, 2022).

Regarding children the result of the study illustrated that about three fifths of children were male while two fifths were females this result could be interpreted as stated by United Nations Educational, Scientific and Cultural Organization (UNESCO), (2022) that males' births is more than female births in rural areas as the more than half of the study participants were from rural areas this agree with the conclusion of Statista 2021, in which the male population was higher than the female population. In the same context a descriptive study of Abdou, Sherif, Wahdan and Ashour (2019) regarding congenital anomalies between Egyptians documented that male gender represented about 70% while female 30% which support the result of the current study.

The vast majority of children included in the current study were less than 5 years old with a mean of 2 years old ($\hat{x} = 24.9$ months) this may be because the most common cases received from all areas around the country of children less than 15 years old in CUSPH and the appropriate timing for majority of congenital anomalies surgical repair. Also, WHO, 2022 stated that children under 5 years of age are risky age group for hospital admission for several causes and highlighted congenital anomalies as a major cause.

More than half of children have a history of hospital admission and more than one third of them have been admitted twice. Most mothers stated that their children experience fever before this is in agree with a study which mentioned that fever still the most common cause of laboratory investigation and hospital admissions for children (Barbi et al., 2017). This may be due to reduced children's ability to dissipate temperature acquired from the hot weather, or their immature ability to regulate body temperature, also children under five years who were the majority of children included in the current study at some point those children immune system still developing making them more susceptible to infection.

Similarly, a study conducted on 235 post operative children, about half of cases had postoperative fever (Raviv, Field, & Adamo, 2022). Approximately one third of mothers do nothing as a response to fever while more than two fifths give medication without description while just one fifth seek physician help. On the same context, a study of Asone and Giovanni, (2017) concluded that one third of the mothers used medication without consultation. This could be interpreted as mothers in Egypt, like many other parts of the may give medication without world, consultation could be because of lack of access to healthcare services, culture and beliefs which include mothers believe that they have the knowledge and experience to treat their children without seeking medical advice, health care can be expensive in Egypt for some social categories, also mothers perception of medication as harmless and can be taken without any risk or side effects which is not always the case and they may face potential risks.

Meanwhile, regarding complication of fever, the study revealed that no mother reports any incidence of complications from fever. Concerning the source of mothers' knowledge about fever care, more than one third of mothers mentioned that their source is their relatives followed by media as a source of knowledge this result might be interpreted as the mothers seek relatives' support to relieve their anxiety then refer to their personal information gained from media. This result is consistent with a study aims to analyze the health care-seeking behaviors and the factors associated it in Burkina Faso stated that mothers with higher education seeking professionals' help while in developing counters they may take another way like relatives (Badolo et al., 2022).

The result of the current study concluded that most mothers had inadequate level of

knowledge with a mean score of (x = 4.08)and vast majority of them had adequate level of knowledge immediately after educational session by mean score of (6.87) also majority of them had adequate level of knowledge at time of discharge with 6.31 as mean score. There was a statistically significance difference between their knowledge level before and immediate and at discharge time. This is consistent with the result of Mohamed et., al., (2019) who found that mothers' knowledge before receiving the nursing educational sessions was poor compared with after receiving it.

This result indicates the need of mothers for frequent educational sessions to raise awareness and quality of care provided by them for their children. As that evidenced by Chang and Huang, 2021 in their study about effect of scenario simulation-based learning in alleviating parental anxiety about fever in children and stated that education is a suitable approach to reducing parent fever anxiety in affecting which level of parenteral performance of care. Also, in a recent study conducted in Zagazig University on 297 mothers about their knowledge related to fever care, about half of them had an inadequate level of knowledge (Waly & Bakry, 2022).

Also, there were no difference in mothers' level of knowledge immediately after educational session and at time of discharge this might be due to the short time in most of the cases to be discharged from the hospital after surgical procedure, so mothers do not forget the knowledge taken. The time was from 5-7 days in almost cases to be discharged from hospital after surgery.

In relation to level of performance of mothers' practice of axillary temperature the study revealed that all mothers had inadequate level of practice of axillary measurement before educational session with a mean score of 2.28 while majority of them had adequate level of practice immediately after practical sessions 8.72 mean score and half of them had the adequate level of practice at time of discharge with 8.34 mean score. And there was statistically а

significance difference in the level of practice among mothers before, immediately and at time of discharge. This result consistent with Waly and Bakry, (2022) in which most of mothers had inadequate practice regarding care of fever for their children including how to assess the presence of fever this may be interpreted as the mothers most commonly not check for the presence of fever until there is a prominent effect on the child many children suffer from fever and they just continue to play because they can't express that until the problem become more and more serious.

Regarding mothers practice of cold compresses, the study revealed that mothers had an inadequate level of practice of cold compressors with 2.27 mean score before clinical sessions while majority of them had adequate level of practice of cold compressors immediately after clinical session and 7.09 mean score, majority had adequate level of practice by 6.77 mean score at time of discharge from hospital. In a Syrian study about practices of mothers during fever management in their children 2020, by Ghadban illustrated that practice of cold compressors among mothers' wrong practice of mothers regarding detecting fever and practice of cold compressors and emphasize on the importance of provision of education to mothers. Mothers in Egypt as a culture use several fast and in effective ways to reduce their children' fever as vinegar or old medicine prescribed to another child or even recommended from others to safe their times and spend it in another work at home as caring other children.

Conclusion:

The current study concluded that mothers who receive nursing educational sessions about fever had a higher mean score of knowledge than before. Mothers who receive nursing educational sessions about fever had a higher mean score of practice than before. There was a statistically significant correlation between mothers' total mean score of knowledge at discharge time and educational level and residency. There was a statistically significant correlation between total mean score of mothers' practice of axillary temperature and residency at the first time.

Recommendations:

Based on the current study results it's recommended to emphasize the importance of education provided for mothers including knowledge and practice to improve their knowledge and performance regarding fever care. Nurses at surgical units need to ensure that all mothers oriented about the appropriate behavior and practice regarding care of fever postoperatively. Also, our community needs more effort to raise their awareness to seek professional help regarding children. of their Also, it is care recommended to further research regarding the effect of nursing educational sessions related to care postoperatively specially fever and caregiver satisfaction.

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