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**Nurses' knowledge, Attitude, and Practices in the  
Management of Childhood Fever in Emergency  
Departments at Governmental Hospitals in Gaza Strip**

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Thesis Approval

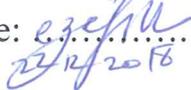
**Nurses' knowledge, Attitude, and Practices in the Management of  
Childhood Fever in Emergency Departments at Governmental  
Hospitals in Gaza Strip**

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## **Dedication**

I dedicate this work to the Almighty Allah for preserving my life, ensure my security in Gaza strip and gave me good Health and strength to be able to do this work.

To my parents for their endless prayers and my family for their encouragement.

To my lovely wife, Ms Nermin and my children Sajed and Sham for their patiency and support.

To my friends for supporting and encouragement.

To all martyrs and injuries in Palestine.

To every person help me to finish this work.

Mohammed S. Rabee

## **Declaration**

I certify that this thesis submitted for the degree of master, is the result of my own research, except where otherwise acknowledged, and that this study (or any part of the same) has not been submitted for a higher degree to any other university or institution.

**Signed:**

Mohammed Saber M. Rabee

Date: / / .

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## **Abstract:**

Fever is the commonest reason for visiting emergency departments among children to seek medical care. Health Care Providers (HCPs) are the primary source of parental knowledge for management febrile children. The aim of this study was to identify nurses' knowledge, attitude and practices regarding to childhood fever management in the emergency departments at governmental hospitals and the determinants that may affect them. Quantitative descriptive cross-sectional study design was conducted at pediatric emergency departments in all governmental hospitals in Gaza strip in period between “December 2017 to October 2018”. Quantitative data was collected using interviewing questionnaire completed by the researcher participant nurses (n=132) were selected by census convenient sample from 8 pediatric emergency departments with a response rate 94%. Descriptive and inferential statistics used to assess the level of nurses’ knowledge attitude and practices. Pilot study was implemented to ensure the clarity and accuracy of items. The study results revealed that nurses mean knowledge, attitude, and practices of fever management, was 62%, 51%, and 66% respectively, these results are not consistent with the line with the of latest international guidelines evidence base, but its consist with local and international studies. The study revealed unreasonable concerns about antipyretic administration; fever complications that may lead to convulsions and brain damage, these concerns also increase family anxiety. Limitations of nurses’ practices focused in usage of antipyretic, usage of tipped sponging, and medical record is a barrier for documentation. Nurses need consistent fever management information by implementation of educational programs, development of an a approved protocol can improve nurses’ knowledge, attitude, and practices.

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## List of Abbreviations

AAP	American Academy of Pediatrics
ADH	Al-Dora Hospital
ANPH	Al-Nasser Pediatric Hospital
AQH	Al-Aqsa Hospital
AQU	Al- Quds University
ARH	Al-Rantisi Hospital
AZU	Al- Azhar University
BBH	Bet-Hanon Hospital
CI	Confidence Interval
CRT	Capillary refill time
EGH	European Gaza Hospital
GS	Gaza Strip
HCPs	Health Care Providers
IL	Interleukin
IUG	Islamic University of Gaza
KAP	Knowledge, Attitude, Practices
KEH	Kamal-Edwan Hospital
KYTC	Khanyounis Training College
MOH	Ministry of Health
NICE	National Institute for Health and Clinical Excellence
NMC	Nasser Medical Complex
NSS	Nursing School – Shifa
PCN	Palestinian College of Nursing
RCN	Royal College of Nursing

RR	Respiratory rate
SDI	Standard Discharge Instructions
SPSS	Statistical Package for Social Sciences
TNF	Tumor Necrosis Factor
UCAS	University College Applied Science
UK	United Kingdom
UNRWA	The United Nations Relief and Work Agency
USA	United States of America
VDI	Video Discharge Instructions
WB	West Bank
WHO	World Health Organization

## **Chapter 1: Introduction**

### **1.1. Background**

Studies concerning fever management approaches used by parents and Health Care Providers (HCPs) started at 1980 and continue investigating thirty years later (Edwards, et al., 2001). The studies demonstrated that misconception about management of fever doesn't change significantly, and expressed incorrect and inconsistent knowledge and practices between nurses toward fever management (Walsh, et al., 2007).

Knobel, (2002), reported that nurses and other HCPs consider fever as harmful event and the severity of illness is measured by the degree of fever, more fever means more severe illness.

Studies about nurses' knowledge, attitude, and practices for childhood fever management in Palestine are limited. The characteristics of childhood febrile illness, nursing education and the health care system in Palestine are different to those of developed countries. Therefore, there may be both similar and additional influences on Palestinian nurses 'management of febrile children. The researcher explained some of the main aspects in regards to Palestinian nurses' knowledge, attitude and practices of childhood fever at emergency departments in Gaza Strip.

### **1.2. Childhood Fever**

Fever is a physiologic response characterized by an elevation of body temperature above normal daily variation of core temperature (NCCWCH, 2013). It considered the most common childhood symptoms (Bertille, et al., 2013). Fever accounts for almost one third of all pediatric urgent care and emergency department visits (Wallenstein, et al., 2012).

The National Institute for Health and Clinical Excellence [NICE] reported that childhoods fever is the second most common reasons for a children hospital admission, and it's the most common reason for children to be seen in hospital emergency departments (NICE, 2013).

Fever is one of the most common complaints of children managed by Pediatricians and other healthcare providers and is the cause of nearly 65% of ambulatory pediatric visits (Polat, et al., 2014). Feverish illness is very common in young children, with between 20% and 40% of parents reported fever in their children each year. Fever commonly seen by HCPs among infants and children, however, each year 100 infants aged one –12 months die from infection this number could be reduced by improving recognition, evaluation, and treatment of febrile illness (NICE, 2013).

Fear and anxiety attached to fever among nurses and other HCPs defined as fever phobia, that lead to negative attitude toward fever and remain unchanged (Sarrell, et al., 2002).

The results of recent studies on the causes of fever showed similar findings, even though the distribution of diseases varies by geography and season, the age and immunity of the patient and the level of care. Studies conducted so far have shown that most (50–75%) febrile episodes in children under 5 years of age presenting at outpatient clinics are associated with acute respiratory infection (WHO, 2013).

Febrile illness in young children usually indicates an underlying infection and is a cause of concern for parents and carers (Hu, et al., 2016). The disease process that leads to fever may be harmful, there is no evidence to demonstrate that fever itself is harmful. In fact, the presence of fever inhibits bacterial growth and the replication of viruses. Fever has many immunological benefits; however, it is often viewed negatively by parents and nurses and treated aggressively (Greensmith, 2013).

### **1.3. Health Professional and Childhood Fever**

Fever is one of the most worrisome symptoms for parents and caregivers. They frequently concerned that untreated fever may lead to brain damage, seizures and death. Similar concerns have been reported by HCPs, despite of these concerns disproven by evidence base (Barbi, et al., 2017). Fever is often an indication of a self-limiting viral infection, rather than a bacterial or serious illness. The cause of fever can be difficult to identify, it can be an indicator of a major illness such as meningitis, septicemia, urinary tract infection or pneumonia (Chiappini, et al., 2017).

According to the Pediatric Clinical Practices textbook (Vu, 2011), temperatures greater than 41°C are managed by the administration of antipyretics and tepid sponging. Temperatures between 39°C and 40°C are to be managed using antipyretics only. When a child's temperature is less than 39°C, it is unnecessary to be reduced except in children who have cardiopulmonary disease, neurological problems and a history of febrile convulsion. The findings about fever management which was conducted by Cohee, et al., (2010) showed differentiation related to cultural, ethnicity and socioeconomic between HCPs in different countries.

### **1.4. Management of Childhood Fever in Palestine**

Mwas and Abureesh (2016) revealed that nurses start to deal with febrile child by discard his clothes and wash child with tap water for 15 minutes on the child head, arms and lower limbs; then administered paracetamol 10-15mg/kg according to physician prescription for children temperature greater than normal range and less than 38.5°C, when temperature elevated to 39-40°C nurses use tepid sponging and measure temperature every 15 minutes until decreased, and sometimes fever between 39-40°C managed only with antipyretic.

Temperatures greater than 41°C are managed by the administration of antipyretics and tepid sponging. This method of nursing intervention and follow up for febrile children not clearly consistent with guidelines of fever management practices; because one nurse is responsible for providing care for approximately 40 – 50 children a day; and family members spend almost all the day hours bedside the child than nurses (Zubedeh, et al., 2016).

These gaps in understanding how febrile children are cared for could have an impact on child safety so that, advanced researches are necessary to explore this issue in the healthcare context in Gaza Strip.

### **1.5. Problem Statement**

Febrile illness in young children usually indicates an underlying infection and is a cause of concern for parents and carers. Pediatric nurses are not expert of fever managers. Knowledge deficits and negative attitude influence their health practices irrespective to additional pediatric education, current experience or level of practices (Hu, et al., 2016).

Temperature recording is an important nursing action in fever management and it's an integral aspect of the pediatric nurse's role (Edwards, et al., 2002). In addition to measuring the temperature, documentation and administer antipyretic medications (Tran, 2014).

Knowledge of fever management is inconsistent across studies from different countries (NICE, 2013). Incorrect beliefs among nurses toward fever and the role of antipyretics still exist. Knowledge deficits may be barriers to communicating or discussing nursing practices with doctors in order to provide better care for febrile children (Tran, 2014).

The purpose of this study was to identify nurses' knowledge, attitude, and practices related to childhood fever management at pediatric emergency departments in all hospitals of the MoH in Gaza Strip. knowledge, attitude, and practices in combination governs all aspects of life in human societies, and all three pillars together make up the dynamic system of life itself (Kaliyaperumal, 2004).

### **1.6. Significance of the Study**

The management of childhood fever is a complex behavior in which some myths and misconceptions exist among nurses, and parents, the data on parent practices related to fever are available, but the limitation mostly between health care professionals practices (Bertille, et al., 2015). This issue may be more serious in the Palestinian healthcare context, where both traditional and western health practices are common and limited research findings are reported (Zubede, et al., 2016).

Despite the fact that childhood fever management is receiving increasing attention regarding its prominent role in health care, little is known about Arab parental and nurses' childhood fever management. In Palestine, information about physician and nurses' knowledge and beliefs about fever or fever management are unknown and not been investigated. Some local researcher conducted in the West Bank (WB) on parents and HCPs in health institutions, the data about physician and nurses' knowledge and beliefs about fever management still limited and need more investigations. To the best of our knowledge, this is the first study in Gaza Strip (GS) that will be conducted to identify the actual nurse's knowledge, attitude and practices regarding management of childhood fever and factors influencing their practices.

### **1.7. Aim of the Study**

To identify nurses' knowledge, attitude, and practices in the management of childhood fever in emergency departments at governmental hospitals in Gaza Strip.

### **1.8. Specific Objectives**

1. To assess the nurses' knowledge about childhood fever, and its relation to socio-demographic values. (Age, sex, level of education, income, level of experience, receive training courses, job satisfaction, high workload, nurses' number, universities, graduation year).
2. To examine the nurses' attitude about childhood fever, and its relation to socio-demographic values.
3. To investigate the nurses' practices regarding to childhood fever, and its relation to socio-demographic values.
4. To identify attitude that influence fever management by nurses.
5. To investigate nurses' practices and decision-making criteria regarding fever management for hospitalized children.
6. To assess the level of healthcare providers' practices towards childhood fever and compare it with the latest evidence-based information about the care of feverish children.
7. To formulate recommendations to policymakers and HCPs in governmental hospitals regarding children fever management.

## **1.9. Research Questions:**

This study aimed to address the following research questions:

1. What is the relationship between socio-demographic characteristics and nurses' knowledge of child hood management?
2. What is the relationship between socio-demographic characteristics and nurses' attitude regarding child hood management?
3. What is the relationship between socio-demographic characteristics and nurses' practices of child hood management?
4. What factors influences nurses' beliefs about childhood fever management?
5. To what extent the nurses' decision-making criteria regarding childhood fever management affected by a febrile medical illness?
6. Do nurses have improper practices about management of childhood fever?
7. Do nurses manage childhood fever as good evidence-based?
8. What barriers to take appropriate decision making in management of childhood fever?

## **Chapter 2: Literature Review**

### **2.1. Introduction**

Fever and febrile illness are one of the most commonly treated childhood illnesses according to (NICE, 2013). Fever in children is a common concern for parents and HCPs; and one of the most frequent presenting complaints in emergency department visits. Although the incidence of serious infections has decreased after the introduction of conjugate vaccines, fever remains a major cause of laboratory investigation and hospital admissions. Furthermore, antipyretics are the most common medications administered to children (Barbi, et al., 2017). Correct management of febrile illness remains complex behavior and unclear in the general population. Variety levels of knowledge and misconceptions related to fever management present in healthcare practitioners, fear of fever and febrile illness has been observed in nursing staff, leading to variability in practices (Kelly, 2015).

This complex behaviour identified by many studies and obtained a variety of myths and misconceptions amongst health care provider. This chapter will identify firstly the fever, pathophysiology and beneficial of this symptom on the health of febrile children. Secondly, obtain the evidence base practices in the management of childhood fever according to recent international protocols. Finally, review the local and international studies which were applied on HCPs regarding childhood fever management.

### **2.2. Pathophysiology and Beneficial of Childhood Fever**

Fever has many immunological benefits; however, it is often viewed negatively by parents and nurses and treated aggressively. Knowing how the body reacts to the presence of pathogens allows healthcare professionals to make informed decisions about what action to

take in caring for the child with fever. A raised body temperature raises the metabolic rate and makes the immune response more efficient. It also stimulates naturally occurring antipyretics but can also have harmful effects (Broom, 2007).

There is a strong association between fever and infection, Fever seen like a hallmark of immune system activation (Blatteis, 2006). The acute-phase response is self-limiting and is considered an early defense response triggered by the release of cytokines, such as interleukin (IL)-1, IL-6, tumor necrosis factor (TNF) - alpha and prostaglandin into the blood (Blatteis, 2006). Circulating levels of IL-6 are considered the best correlation with fever among the measurable plasma cytokines. It is suggested that endogenous IL-6 functions as an indication that a pyrogen is present, whereas IL-10 functions as an endogenous antipyretic, protecting the body from very high temperatures by inhibiting the production of IL-6 (Dalal & Zhukovsky, 2006). The release of these cytokines prevents the brain from overheating when an infection occurs; these cytokines are transported by the blood to the preoptic-anterior hypothalamic area during infection or endogenous pathophysiologic reactions (Blatteis, 2006).

The hypothalamus, acts as a thermostat by maintaining body temperature at a new set-point. This thermostatic set-point in the hypothalamus is raised in a febrile response. When the core temperature elevates, the sympathetic nervous system is inhibited, leading to vasodilation of skin blood vessels and stimulation of the sweat glands, to facilitate evaporative heat loss. The elevation of the set point also activates the neurons in the vasomotor center to initiate vasoconstriction with resultant blood shifting from the periphery to the central body organs (Blatteis, 2006).

Shivering results from this mechanism with resultant heat production from increased muscular activity. Other factors, such as reduction in activity, loss of body fluid, sweating

and seeking a warm environment contribute to heat production and conservation and are controlled by the hypothalamus through monitoring the hypothalamic blood temperature. This process prevails until the body temperature matches the hypothalamic thermal reset point, when heat production and heat conservation are matched to maintain a constant higher temperature (Blatteis, 2006).

In conclusion, fever is a normal physiologic response that does not necessarily demand treatment unless a specific harmful underlying cause is found (e.g., meningitis), or it provokes significant discomfort and metabolic disorders. Central nervous system damage occurs when the temperature exceeds 41.7°C but common febrile responses associated with infection are unlikely to approach this level (El-Radhi, 2008). The synthesis of body temperature representing fever, high fever, very high fever and hyperthermia from research studies and guidelines is presented in Table 2.1.

**Table 2.1: Synthesis of Body Temperature from Research Studies and Guidelines**

	<b>Range</b>	<b>References</b>
<b>Normal body temperature</b>	35.9°C – 38.0°C	American Academy of Pediatrics (2008); El-Radhi, et al. (2008); NICE (2013).
<b>Fever</b>	≥ 38.1 – 39.0 °C	Chiappini et al. (2012); Vu (2011); American Academy of Pediatrics (2008).
<b>High fever</b>	≥ 39.1°C – 40.0°C	(Chiappini, 2016; El-Radhi, 2008; Knoebel, 2002)
<b>Very high fever</b>	≥ 40.1°C – 41.0°C	Polat, et al. (2014); Sullivan & Farrar (2011); Vu (2011).
<b>Hyperthermia</b>	> 41.0°C – 42.0°C	American Academy of Pediatrics (2008); El-Radhi (2008); Trautner, et al. (2006).

### **2.3. Fever Management and Evidence Base Practices:**

Fever is a picture of the body's response to protect the host during infection, parents and healthcare providers didn't have enough knowledge for dealing with febrile child and their concerns about complications of fever management, these concerns and knowledge deficit affect negatively on parental and HCPs practices for managing febrile children (Tran, 2014).

The evidence of childhood fever management depends on recent guidelines and reviews and latest studies such as a Clinical guideline have been developed in the American Academy of Pediatrics (AAP, 2008), Update of the Italian Pediatric Society Guidelines for Management of Fever in Children which was conducted by (Chiappini et al., 2016), National Institute for Health and Clinical Excellence (NICE, 2013) that applied in UK about feverish illness in children. Additional systematic review which was conducted by (Kelly et al., 2015), (Kim, 2016) and another recent local and international studies, that recommended nursing practices to reduce fever in non-critically ill conditions.

The majority of children presenting with fever will have either a self-limiting viral condition or an obvious cause for their fever for which specific treatment can be given. A minority will present with fever with no obvious underlying cause, and a small number of these will have a serious illness. The child with a potentially serious illness is recognized and managed appropriately and the child with a minor self-limiting illness is not burdened with unnecessary medical intervention and the parents/carers are supported with appropriate self-care advice (NICE, 2013).

Specific nursing interventions aimed at reducing the child's temperature will not affect the outcome of the underlying illness. So you should aim your care at supporting the body's

natural physiological responses, increase fluids intake and improving the child’s comfort (Trigg and Mohammed, 2006).

Febrile children need to be assessed thoroughly for the presence of symptoms to clarify the illness. The guideline by the NICE (2013) developed a traffic light system for identifying risk of serious illness (Table 2.2). Children at low risk have symptoms in the ‘green’ column. Children at intermediate risk have fever and any symptoms in the ‘amber’ column. Children at high risk have fever and any of the symptoms in the ‘red’ column. The traffic light system indicates that temperature alone cannot be used to determine the illness severity. Health professionals must assess vital signs, capillary refill time and signs of dehydration as part of their routine assessment for febrile children.

**Table 2.2 Traffic light system for identifying risk of serious illness:**

	<b>Green – low risk</b>	<b>Amber – intermediate risk</b>	<b>Red – high risk</b>
Colour (of skin, lips or tongue)	<ul style="list-style-type: none"> <li>• Normal colour</li> </ul>	<ul style="list-style-type: none"> <li>• Pallor reported by parent/carer</li> </ul>	<ul style="list-style-type: none"> <li>• Pale/mottled/ashen/blue</li> </ul>
Activity	<ul style="list-style-type: none"> <li>• Responds normally to social cues</li> <li>• Content/smiles</li> <li>• Stays awake or awakens quickly</li> <li>• Strong normal cry/not crying</li> </ul>	<ul style="list-style-type: none"> <li>• Not responding normally to social cues</li> <li>• No smile</li> <li>• Wakes only with prolonged stimulation</li> <li>• Decreased activity</li> </ul>	<ul style="list-style-type: none"> <li>• No response to social cues</li> <li>• Appears ill to a healthcare professional</li> <li>• Does not wake or if roused does not stay awake</li> <li>• Weak, high-pitched or continuous cry</li> </ul>

**Table 2.2 Traffic light system for identifying risk of serious illness: (Cont.)**

	<b>Green – low risk</b>	<b>Amber – intermediate risk</b>	<b>Red – high risk</b>
Respiratory		<ul style="list-style-type: none"> <li>• Nasal flaring</li> <li>• Tachypnoea:</li> <li>• RR* &gt; 50 breaths/ minute, age 6–12 months</li> <li>• RR &gt; 40 breaths/ minute, age &gt; 12 months</li> <li>• Oxygen saturation ≤ 95% in air</li> <li>• Crackles in the chest</li> </ul>	<ul style="list-style-type: none"> <li>• Grunting</li> <li>• Tachypnoea: RR &gt; 60 breaths/minute</li> <li>• Moderate or severe chest indrawing</li> </ul>
Circulation and hydration	<ul style="list-style-type: none"> <li>• Normal skin and eyes</li> <li>• Moist mucous membranes</li> </ul>	<ul style="list-style-type: none"> <li>• Tachycardia: <ul style="list-style-type: none"> <li>➤ 160 beats/minute, age &lt; 1 year</li> <li>➤ 150 beats/minute, age 1–2 years</li> <li>➤ 140 beats/minute, age 2–5 years</li> </ul> </li> <li>• CRT** ≥ 3 seconds</li> <li>• Dry mucous membranes</li> <li>• Poor feeding in infants</li> <li>• Reduced urine output</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced skin turgor</li> </ul>
Other	<ul style="list-style-type: none"> <li>• None of the amber or red symptoms or signs</li> </ul>	<ul style="list-style-type: none"> <li>• Age 3–6 months, temperature ≥ 39°C</li> <li>• Fever for ≥ 5 days</li> <li>• Rigors</li> </ul>	<ul style="list-style-type: none"> <li>• Age &lt; 3 months, temperature ≥ 38°C</li> </ul>
		<ul style="list-style-type: none"> <li>• Swelling of a limb or joint</li> <li>• Non-weight bearing limb/not using an extremity</li> </ul>	<ul style="list-style-type: none"> <li>• Non-blanching rash, bulging fontanelle, neck stiffness, focal neurological signs</li> </ul>

\*RR = respiratory rate. \*\* CRT = capillary refill time.

Physical methods including cold bathing, tepid sponge baths, cooling blankets, and alcohol rubs are not recommended. The scientific evidence does not support tepid sponge massage (Kim, 2016). There is evidence that these methods cause adverse effects including vasoconstriction, shaking, prolonged shivering; with severe hypoglycaemia, coma or even death due to sponge bath with alcohol (Meremikwu, & Oyo-Ita, 2009). Tepid sponging does not affect the thermoregulatory set point and may cause discomfort to febrile children due to the hypothalamus attempting to offset the decrease in external temperature produced by sponging (Glasper & Richardson, 2006). The combination of tepid sponging and antipyretics is not encouraged. Tepid sponging had a short term or no effect in temperature reduction but its adverse effects of crying, discomfort and shivering were significant (NICE, 2013).

Paracetamol is the antipyretic agent of first choice, because longstanding clinical experience has shown that it is safe. It should be given orally at a dose of 10–15 mg/kg every four to six hours. It takes effect in 30–60 minutes. It can also be given as a suppository or intravenously. Rectal administration is useful for children who are vomiting or have impaired consciousness. Ibuprofen is given at a dose of 10 mg/kg body weight every six hours, with a maximum daily dose of 40 mg/kg. Its main effect sets in within three to four hours and lasts only slightly longer than that of paracetamol—six to eight hours, there is no scientific evidence indicating any significant superiority of ibuprofen over paracetamol (Niehues, 2013).

Antipyretics including paracetamol and ibuprofen should be used selectively when children appear unwell or distressed (Chiappini, et al., 2017; NICE, 2013). These medications can treat the proximal cause of fever, the increased hypothalamic set point, but they do not treat the ultimate cause of underlying infection. The updated Italian guideline has reported the risk of asthma when taking paracetamol (Chiappini, et al., 2017).

The antipyretics should be given carefully with the aim of relieving discomfort or pain rather than decreasing the temperature itself, alternating use of antipyretics should be

discouraged due to the risk of confusion and error. Antipyretics do not prevent febrile convulsions (Kim, 2016). Ibuprofen should be used with caution and its combination with paracetamol is not recommended. Ibuprofen should not be used in children presenting with dehydration due to the increased risk of renal failure. It is not recommended in children with chickenpox, those with a high risk of haemorrhage and should be avoided in patients with Kawasaki disease (Chiappini, et al., 2017). Regarding ibuprofen, it is important to highlight that although gastritis and gastrointestinal bleeding are the most frequent side effects, renal insufficiency may be the most severe side effect (Raffaeli, et al, 2016). Antipyretics are ineffective in preventing or decreasing the recurrence of febrile convulsions and the guidelines recommended that they should not be used for this purpose (American Academy of Pediatrics, 2008; Chiappini, et al., 2017; NICE, 2013).

Room temperature of 18°C is comfortable and best measured by a room thermometer. You can reduce a room's temperature by opening a window or using a fan not directly on child because cold air can induce shivering and a resultant rise in temperature. Children should not be underdressed or overwrapped. Nurse should observe for signs of dehydration and encourage the child to drink cool drinks and breast feeding should continue. Record the child's temperature should be one hour after giving antipyretics and in accordance with local policies, and should include comments on the child's behavior, overall condition and parent's/carers' observations (RCN, 2013).

In summary, nursing interventions for febrile children must be based on the latest scientific evidence and depend on each child's illness condition, not the thermometer reading. Temperature alone is not an indicator for antipyretic administration. Tepid sponging is not effective in reducing fever and antipyretics should be used with caution and alternating of antipyretics is unnecessary. Parental counselling should focus on observing the child's activity, detection of signs of serious illnesses and maintaining hydration.

## 2.4. Operational Definitions:

1. **Fever:** An elevation of body temperature above the normal daily variation. According to this clinical practices guideline, a temperature above 38°C can be considered fever but the clinician should also consider the daily variation and other physiological or environmental factors when they determine if a child is febrile (Vu, 2011 & NICE, 2013). The researcher will use this definition as operational definition.
2. **Childhood Fever:** Elevation of core body temperature above 38°C among children their age more than one year to 12 years old, who visit pediatric emergency departments.
3. **Nurse:** One's needs to have completed high school, that is, 12 years of schooling. Nursing education at colleges and universities consists of a 2-year diploma, 3 years high diploma, a 4-year bachelor program then studying 2 years to have master degree. Upon graduation from any of these courses, a nurse is described as a general nurse (Tran, 2014). The researcher will use this definition as operational definition.
4. **Knowledge:** Knowledge is often defined as a belief that is true and justified. This definition has led to its measurement by methods that rely solely on the correctness of answers. A correct or incorrect answer is interpreted to mean simply that a person knows or does not know something (Hunt, 2003). The researcher will use this definition as operational definition.
5. **Attitude:** Introspectively unidentified (or inaccurately identified) traces of past experience that mediate attributions of qualities to members of a social category (Banaji & Heiphetz, 2010). The researcher will use this definition as operational definition.
6. **Practices:** An outcome of complex inter-relationships and shared social practices (O'Brien, et al., 2007). The researcher will use this definition as operational definition.

## 2.5. Nurses' Knowledge of Childhood Fever

In the latest Pediatric Clinical Practices textbook, the definition of fever is an elevation of body temperature above the normal daily variation. According to this clinical practices guideline, a temperature above 38°C can be considered fever but the clinician should also consider the daily variation and other physiological or environmental factors when they determine if a child is febrile (Vu, 2011 & NICE, 2013).

Fever clinically defined as elevation of body temperature 1°C or greater above the mean at the set of temperature recorded. For example, the range of body temperature at the axilla is 34.7- 37.4°C with a mean of 36.5°C, 1°C above the mean is 37.5°C, so that fever confirmed if measured rectally  $\geq 38.0^{\circ}\text{C}$ , Orally  $\geq 37.7^{\circ}\text{C}$ , Axillary  $\geq 37.4^{\circ}\text{C}$ , tympanic  $\geq 37.6^{\circ}\text{C}$  (El- Radhi, 2008).

Fever in young children can be a diagnostic challenge for healthcare professionals because it is often difficult to identify the cause. In most cases, the illness is due to a self-limiting viral infection or serious bacterial infections such as meningitis or pneumonia. Some children with fever without apparent source are difficult to distinguish between simple viral illnesses and life-threatening bacterial infections in this group. (NICE, 2013). Pediatric nurses need to understand the physiology of the febrile response as well as common misconceptions regarding fever in order to promote safe and evidence-based fever management for their young patients (Gordon, 2014).

Fever retards the growth and reproduction of bacteria and viruses, enhances neutrophil production and T-lymphocyte proliferation, and aids in the body's acute-phase reaction. The degree of fever does not always correlate with the severity of illness. Most fevers are of short duration, are benign, and may actually protect the host. Data show beneficial effects on certain components of the immune system in fever, and limited data have revealed that fever actually helps the body recover more quickly from viral infections, although the fever may result in discomfort in children (Sullivan & Farrar, 2011).

## **2.6. Nurses' Attitude of Childhood Fever**

Palestinian healthcare context has different beliefs; where both traditional and western health practices are common, they believed to reduce body temperature include sponging, bathing or coin massage. International reports show that the fever management practices of parents are learned from healthcare professionals (Zubedeh, et al., 2016).

Nurses were concerned about febrile convulsions and brain damage if the fever was left untreated. Nurses continue to believe that antipyretics can prevent febrile convulsions, or would be unsafe for a febrile child to leave the emergency department. A positive attitude toward fever has been reported in some recent studies, nurses have reported that fever is beneficial and that in some children, they also agree that regular antipyretic administration may hide some illness symptoms and affect diagnosis. Nurses also have a strong belief in the use of antipyretics to reduce parental anxiety and the child's discomfort and temperature (Tran, 2014).

Misconceptions and unfounded fears regarding fever exist among parents and pediatric providers alike, despite the evidence that fevers are not harmful in most circumstances. In addition, fear of fever can lead to aggressive and dangerous practices, including overdosing with antipyretics and sponge bathing with alcohol (Gordon, 2014).

Pediatric nurses believe that fever is harm, causing febrile convulsions and brain damage, antipyretics are administered to prevent febrile convulsions and alternate antipyretics are given when temperatures are not reduced (Edwards, et al., 2007). Negative beliefs not influenced by nurses' knowledge, experience, education or level of practices and didn't impact on nursing practices (Walsh, et al., 2007).

## **2.7. Nurses' Practices in Management of Childhood Fever**

The healthcare professionals should know how to recognize fever, assess children with fever, and treat children with fever and role of nurses and parents (Hu. et al. 2016). The mercury-in-glass thermometer was the most commonly used thermometer type in both hospitals and homes, various non-invasive thermometry methods are available today, and there is no consensus on the most accurate method of thermometry and the best measurement site (Kelly et al., 2015).

According to 2016 Update of the Italian Pediatric Society Guidelines for Management of Fever in Children, Antipyretics should be administered with the purpose to control the child's discomfort. Antipyretics should be administered orally; rectal administration is discouraged except in the setting of vomiting. The combined use of paracetamol and ibuprofen is discouraged, considering risk and benefit. Antipyretics are not recommended pre-emptively to reduce the incidence of fever and local reactions in children undergoing vaccination, or in attempt to prevent febrile convulsions in children. Ibuprofen and paracetamol are not contraindicated in children who are febrile with asthma, with the exception of known cases of paracetamol- or non-steroidal anti-inflammatory drug-induced asthma (Chiappini, et al., 2017).

HCPs should improving the child's comfort by maintaining hydration, educating parents on the appropriate use, dosing, and safe storage of antipyretics, in addition, to minimize fever phobia for their families and emphasize that antipyretic use does not prevent febrile seizures, and advocate for a limited number of formulations of acetaminophen and ibuprofen and dosing instructions for antipyretic products to promote safety. Combination therapy of acetaminophen and ibuprofen may place infants and children at increased risk because of dosing errors and adverse outcomes, and these potential risks must be carefully considered (Sullivan & Farrar, 2011).

According to (2016) update of the Italian pediatric society guidelines for management of fever in children, The guideline for methods of temperature measurement is axillary measurement by using a digital thermometer is recommended in children younger than 4 weeks of age in all settings, In the hospital or ambulatory care setting, axillary temperature measurement using a digital thermometer or an infrared thermometer (tympanic or with or without skin contact) is recommended for children older than 4 weeks (Chiappini, et al., 2017).

## **2.8. Local and International Studies**

Zubede, et al., (2016) conducted a cross-sectional study on 100 physician and nurses in a pediatric clinic in Hebron, Palestine to describe nurse's management toward febrile children and difference from last evidence-based practices. It demonstrated that nurses don't give enough education about fever and fever management practices in same of evidence based practices, misconceptions about management and complications of fever, nursing performance does not affected by demographic variables. They recommended an educational program about fever management according evidence base for nurses to improve nursing performance.

Cross-sectional study conducted by Mwas & Abureesh, (2016) for 100 nurses in Nablus District, Palestine, to investigate nursing knowledge, attitude and practices in the management of childhood fever. It revealed that inconsistent knowledge about fever, non-evidence-based beliefs and practices among nurses, nurses reported negative beliefs about fever, using antipyretics and/or tepid sponging effects and use of antipyretics as necessary to prevent febrile convulsions, they have good knowledge in area of definition of fever, antibiotic and antipyretic use. The recommendations were focus on parent's education in area of all aspect related to fever, and implementing educational programs for nurses about recent evidence base.

Another local study applied in Hebron pediatric clinics which was conducted by Doan's (2010) studied mother's knowledge, attitude, and practices in the management of childhood fever, found misconceptions and wrong belief about fever and recommended to assess nurses and doctor's knowledge about fever consequences.

2059 questionnaires were completed in the area of Israelian occupation, a study was conducted by Sarrell et al., (2002) targeted physicians, nurses, and parents and revealed that fear of brain damage due to fever was noted in almost twice as many nurses as physicians, some nurses consider fever a risk factor for serious morbidity, mostly febrile convulsions and brain damage, even though these associations have long since been disproven.

Tobón (2017) conducted a literature review from scientific articles published between 2007 and 2017 in following databases: EBscohost, Science Direct, MEDLINE, PubMed, CINAHL, Web of Science, and CUIDEN, to make a critical view of caring practices about fever in children, he concluded that the conception of fever in children by focusing on the fear and the damage still remains, the most common caring actions, such as sponge bath and antipyretics use and abuse still practicesd. Child caring should focus on comfort, on a cool and quiet environment, and on increase in fluid intake to avoid dehydration and other complications.

Wood and Friesen (2017) conduct a study for multidisciplinary team reviewed available evidence and created video discharge instructions (VDI) for three common pediatric diagnoses: gastroenteritis, bronchiolitis, and fever. Knowledge assessments were collected before and after delivery of discharge instructions to caregivers for both the standard written/verbal discharge instructions (SDI) and VDI groups. Analysis found that the VDI group achieved significantly higher scores on the post-test survey ( $P < .001$ ) than the SDI group.

Hu, et al. (2016) they used the Joanna Briggs Institute's Practical Application of Clinical Evidence System and Getting Research into Practices to examine compliance with fever management criteria based on the best available evidence before and after the implementation of strategies to spread the use of evidence-based practices protocols. They found significant improvements in pediatric fever management, and found that use of effective strategies to standardize the protocol for fever management, implement assessment tool, develop multimedia materials, and deliver continuous staff education and update nursing documentation and patient education pamphlets to ensure best practices is delivered by nurses to improve patient outcomes.

Raffaelli, et al. (2016) conducted a study for 500 HCPs and 500 families, to evaluate the adherence of healthcare providers and parents to the current recommendations concerning fever and pain management, there were gaps in the knowledge of both healthcare providers and parents. Global adherence to the guidelines was lower among the pediatric nurses than the other healthcare providers. Attitude of HCPs in management of childhood fever are not in line with current recommendations the main educational interventions. Nurses preferred rectal administration over the recommended oral administration, the HCPs often prescribe a higher than recommended dose of ibuprofen, underlining the risk of drug misuse. Some HCPs recommended the alternate administration of paracetamol and ibuprofen as a means of despite of less safe and not more efficacious. Need to improve the knowledge of HCPs concerning the management of fever not only to guarantee children's health, but also to reduce the unnecessary overloading of pediatric emergency departments.

Four focus groups were analysed using the constant comparative technique among 22 Netherlands well-child clinic professionals. Most of the workload is driven by parental worries, the possible drivers of parental worries is lack of knowledge, lack of experience or

having past negative experiences with fever, low educational level and inconsistencies in paracetamol administration advice among healthcare professionals. Parental information needs should be easy to find, easy to understand and verbal information provision needs to be supported by hard copy visual information and web-based applications. The timing of information needs to provide within the first two months of a child's life (Peetoom, et al., 2016).

A reviewing study in journal databases and clinical guidelines from 2000 to 2015, to address misconceptions of childhood fever and fever management practices among parents and HCPs found significant gaps between current concepts and practices. Misconceptions and unrealistic concerns among HCPs still exist; antipyretics should be given carefully to relieve child discomfort or pain rather than decreasing the temperature itself, Antipyretics do not prevent febrile convulsions and tepid sponge massage does not supported by scientific evidence (Kim, 2016).

Park and Kim (2016) applied descriptive correlation study for 109 day-care center teachers to investigate factors affecting day-care center teachers' during management of childhood fever, the mean percent of correct answers for knowledge about childhood fever was 42.9%, high Levels of anxiety between teachers, Many day-care center teachers didn't used recommended practices for childhood fever management. In summary, knowledge and anxiety related to fever are important factors in predicting their fever management.

Kelly, et al. (2015) conducted a systematic search within ten bibliographic databases (1565 studies) from database inception to June 2014. The study concluded that healthcare professionals regularly advise parents on fever management, but the information given to parents needs to be timely, consistent and accurate so that inappropriate fever management is reduced or eliminated.

A French national cross-sectional observational study between 2007 and 2008 among general practitioners, primary care pediatricians and pharmacists regard fever management in children, showed that practices differed greatly from national recommendations for managing fever in children. In addition to, significant practices variations were associated with characteristics of the child age, fever level and diagnosis, and HCP regarding profession and experience (Bertille, et al., 2015).

Knight (2015), conducted a study about Triage nurse's assessment of a child with a fever, he emphasized on the triage nurse role thorough knowledge of up to date practices in caring for the child with fever, and to accurately assess and manage the child. Using evidence based practices to apply appropriate triage categories, effective care including accurate and informed education of parents.

A comparison between blended (combining face-to-face and online learning components) and face-to-face learning method, a study conducted for Korean pediatric nurses as educational program about childhood fever management, by using non-equivalent control group pre and post-test design. Learning outcomes did not significantly differ between the two groups. However, learners' satisfaction was higher for the blended learning program than the face-to-face learning (Jeong & Kim, 2015).

Cross sectional study which was conducted by Tran (2014) to investigate knowledge, attitude, and practices of Vietnamese pediatric nurses toward childhood fever. Their knowledge of fever management is inconsistent, negative attitude among nurses toward fever and incorrect beliefs about the role of antipyretics still exist, pediatric nurses mostly follow doctors' orders and knowledge deficits may be barriers to communicating or discussing nursing practices with doctors. Nurses seem to measure temperature accurately, they preferred sites to take body temperature differ, but knowledge about the timing for

correct temperature measurement at each site and read thermometers are accurately. Nurses had a good control over tepid sponging but no control over antipyretics use. Some nurses used hand palpation to detect fever and considered this method as good as a thermometer; they were more likely to measure rectal temperature in children less than 3 years of age. The rectal route is more reliable than the axillary method, but it is rarely used. Nurses did not clean thermometers appropriately, and did not use a plastic sheath for the thermometer or clean the thermometer with alcohol wipes or soap and water. Nurses' fever management medication practices are inconsistent. Some nurses administered antipyretics to settle children at night, at medication rounds, and at parents' request to reduce their anxiety. Nurses have used different unsafe types of non-pharmacological methods to reduce the temperature (e.g., vinegar compresses and/or undressing the child).

Journal of Pediatric Nursing published a study for Gordon (2014), it discusses the pediatric nurse roles in dealing with febrile child, and revealed that pediatric nurses are in a unique position to talk to parents about fever. It is imperative that nurses have knowledge of the febrile response, benefits, and safe management of fever. Nurses should discuss what parental beliefs about fever to identify the misconceptions. Nurses can educate parents to focus on the comfort of the child by offering fluids and removing extra clothes, observing the child for signs of serious illness, giving antipyretics carefully with the objective of improving the comfort of the child rather than decreasing the temperature. The desired outcome of parental education is to limit fever phobia while promoting safe management of fever.

A descriptive, quantitative study conducted by Greenmith, (2013) to 119 nurses about nurses' knowledge and attitude towards fever management in one Irish children's hospital, participated nurses showed lack of knowledge and inconsistent attitude are affecting the care of febrile children, and may be fuelling parents' fever phobia. They recommend

improving nurses' knowledge of fever and fever management to promote evidence-based care for febrile children to change inappropriate attitude.

Chiappini, et al. (2012) consider pediatricians as their primary source of information for parents; Educational programs targeted to educate pediatricians may be an effective action to change the parents' understanding and management of fever.

Febrile seizures are mostly self-limiting, isolated events with no sequelae in later life; a minority is more complex (Cross, 2012).

Reviewing of 15 scientific articles where examined in accordance with an integrative study design to describe parents' knowledge concerning fever in children, and to illuminate attitude concerning fever treatment among health care professionals was obtaining the need for a deeper knowledge, in both health care professionals and parents, to follow an evidence-based treatment regimen and prevent unnecessary administration of antipyretics (Aurell. et al., 2012).

American Academy of Pediatrics in USA published a study conducted by Sullivan, et al., (2011) revealed that fever is not the primary illness but is a physiologic mechanism that has beneficial effects in fighting infection. There is no evidence that fever itself worsens the course of an illness or that it causes long-term neurologic complications. The primary goal of treating the febrile child should be to improve the child's overall comfort rather than focus on the normalization of body temperature. When counselling the parents or caregivers of a febrile child, the general well-being of the child, the importance of monitoring activity, observing for signs of serious illness, encouraging appropriate fluid intake, and the safe storage of antipyretics should be emphasized. There is evidence that combining these 2 products is more effective than the use of a single agent alone; but it may be more complicated and contributed to the unsafe use of these drugs.

Sun and Sun (2010) applied a reviewing for Journal databases and clinical guidelines from 1990 to 2009 about fever and fever management in children, the evidence suggested that uncomplicated fever is relatively harmless, but it is an important immunological defense. Antipyretics should not routinely be used with the sole aim of reducing body temperature in children with fever who are otherwise well. Lack of evidence supports the practices of alternating acetaminophen and ibuprofen, and the routine use of tepid sponge bath. They conclude that fever management in children does not reflect research evidence; pediatric nurses can play an important role by encouraging clinical research and be developed educational interventions for pediatric nurses to improve the quality of nursing care in the management of childhood fever.

Australian study which was conducted by Edwards (2007) about fever management, practices identified varied decision-making criteria and inconsistent practices influenced by many external variables include medical orders, the child's temperament, a history of febrile convulsions, parental requests, colleagues and ward norms. Inconsistent findings in definition of fever, antipyretics were administered to febrile children for pain relief, irritability, at parents' request and to settle a child for the night, administration was reported to be higher during the day and evening shifts, at medication rounds and when the ward is busy, at night, nurses are reluctant to waken a sleeping febrile child, preferring to observe them, and recommended to promote consistent fever management practices.

Another Australian study applied by Considine and Brennan (2007) for thirty-one emergency nurses by a pre and post-test multiple choice questions, to evaluate the effect of an evidence-based pediatric fever education program on emergency nurses' knowledge. The findings show positively correlated with knowledge acquisition in Pre-test score. It also identified associations between independent fever management decisions and

participant characteristics, it influenced by experience, hours of employment, level of appointment, and post graduated qualifications and pre-test score.

Self-reported study conducted by Walsh, et al. (2005) for 51 Australian pediatric nurses to describe nurses' knowledge attitude toward fever and its management. This study obtained that nurses mean knowledge about the physiology of fever and general fever management and antipyretic was 62%, less than expected. Participants reported positive attitude toward the benefits of fever, Negative attitude included disbelief that temperature is often unrelated to illness severity, conflicting attitude toward febrile convulsions were highlighted by beliefs that antipyretic therapy prevents these and that antipyretics do not prevent initial febrile convulsions, Positive beliefs about the effectiveness of paracetamol administration. Continuing education in fever management was recommended.

## **Chapter 3: Materials and Methods**

### **3.1. Introduction**

This chapter explained the health systems research design and methods which included the study population and its eligibility criteria, sample size, sampling technique which used, the method of data collection, data analysis methods.

### **3.2. Research Design**

The study used a quantitative descriptive cross-sectional design.

### **3.3. Setting of the Study**

The study conducted in pediatric emergency departments in all governmental hospitals in the Gaza Strip (Bet-Hanon Hospital (BHH), Kamal-Edwan Hospital (KEH), Al-Dora Hospital (ADH), Al-Rantisi Hospital (ARH), Al-Nasser Pediatric Hospital (ANPH), Al-Aqsa Hospital (AQH), Nasser Medical Complex (NMC), and European Gaza Hospital (EGH)); all of these hospitals have 8 departments provide emergency care for children all over the Gaza Strip.

### **3.4. Study Population**

The target participants consisted of nurses currently working in the pediatric emergency departments and nurses with previous experience in emergency and shifted to other department since less than one year at governmental hospitals in the Gaza Strip, they approximated 140 nurses.

### **3.5. Study Sampling and Sample Size**

A convenient sample used which includes 132 nurses (All nurses who work in the pediatric emergency departments in all governmental hospitals in the Gaza Strip), they asked to answer the questionnaire after the oral agreement of participation about the study.

### **3.6. Instrument of the Study**

Interviewing questionnaire was developed by the researcher to assess knowledge, attitude and practices of nurses regarding nursing care of childhood fever. Based on conducted research literature; globally and locally. An expert panel team of researchers consulted to assess clarity and relevance of the newly developed questionnaire to the objectives of the study in term of content validity. The Questionnaire consist of four domains, the first domain for socio-demographic data for participants, the second domain for knowledge domain and their answer (Yes, Don't Know, No), the third domain for attitude and their answers were likert scale (Strongly Agee, Agree, Neutral, Disagree, Strongly Disagree), finally the forth domain for practices domain and their answer (Yes, No).

### **3.7.Data Collection**

The researcher fulfils interviewing questionnaire according participant answers; data was collected during unit visiting in different times during shifts (day, evening, night) in the period of study from “April - June 2018”.

### **3.8. Eligibility Criteria**

#### **3.8.1. Inclusion Criteria:**

1. Nurses currently worked at pediatric emergency department.
2. Nurses previously worked in emergency and shifted to other department since less than one year in the same hospital.
3. Volunteer's nurses worked at pediatric emergency departments for more than 6 months.

### 3.8.2. Exclusion Criteria:

1. Students were presented in emergency department during clinical training.
2. Participants who refuse to participate in the study.

### 3.9. Scientific Rigors

#### 3.9.1. Validity

After constructing the questionnaire, it reviewed by experts, to judge face and content validity, and to get feedback and comments.

#### 3.9.2. Reliability

The reliability of the questionnaire tested immediately after data cleaning and pilot study and statistically by Cronbach Alpha test with accepted reliability coefficient not less than 0.7. The reliability improved by standardization of the instrument and its implementation, design of questionnaire manual and data collection collected by the researcher himself.

**Table 3.9.2: Reliabilities estimates for domains after pilot study:**

<b>Domains</b>	<b>Items</b>	<b>Cronbach Alpha</b>
<b>Knowledge</b>	30 items	83%
<b>Attitude</b>	13 items	33%
<b>Practices</b>	32 items	52%

The reliability test was calculated for three domains (Knowledge, Attitude, and Practices) after finished the collection of data from all participants and analysed by SPSS, it showed that Cronbach's Alpha equal 0.75 for the total questions. Because of limited number of study sample the pilot participants were add to the study sample.

### **3.10. Pilot Study**

A pilot study conducted for 17 nurses, they filled the questionnaire before starting the whole data collection as a pre-test to point out weaknesses in wording, predicted response rate, determined the real time needed to fill the questionnaire and identified areas of vagueness and to test the validity and suitability of the questionnaire. The questionnaire evaluated by five arbitrators to assess the validity of the questionnaire, comments and modifications applied as needed. The filling of the questionnaires takes the same of recommended time, but 20 minutes in emergency department is too much for nurses to leave their patients due to high number of items in questionnaire and the work load.

### **3.11. Statistical Management and Procedures**

After checking and reviewing all filled questionnaires on the same way, data were entered in the computer using SPSS (Statistical Package for Social Science) software version 23 for data coding, entry, and analysis. After finishing the data entry process, check codes were used to avoid double entries. Pretesting of the tool were done to eliminate inconsistencies and made the questions relate to the local setting. Data cleaning were done to account for missing value in a bid to ensure integrity and reliability. Frequencies and cross tabs were used to do the data analysis. First, data cleaning was done to ensure that all data entered accurately and in appropriate way. Data cleaning were conducted through selecting and checking out of a random number of the filled questionnaires, and also through operating frequencies and descriptive statistical test as Chi square. The level of significance was set at a *P* value of less than 0.05, confidence interval (CI) at 95%.

### **3.12. Ethical and administrative considerations**

The researcher committed to all ethical consideration required to conduct a research. Ethical approval taken from Helsinki Committee in Gaza Governorates, MoH, in addition to approval from College of Health Professional at Al-Quds University was obtained by formal application. Every participant in the study receives a complete explanation of the research purposes, they informed about the optional participation in the study and confidentiality was given and maintained. The protection for the rights of the participants was a priority in this study and all the ethical consideration observed and respected for people and human rights and respect for truth.

### **3.13. Period of Study**

The study was conducted in December 2017 and continued to October 2018.

### **3.14. Limitation of the Study**

The limitation of this study was the number of populations less than expected so that we increased the population by involvement of all employed nurses were previously work in emergency departments and shifted to other departments since less than one year. Another limitation was impossibility of calculation of mean age, experience and income of study participants due to categorical presence in the questionnaire. Finally, the workload and shifts changes cut the interview more than one time.

## Chapter 4: Results and Discussion

### Introduction

In this chapter the results and discussion for describing and explaining the nurses' knowledge, attitude and practices regarding childhood fever management and comparing these findings with latest evidence base and with previous studies. These results obtained the descriptive statistics of knowledge, attitude and practices, and the relationship with participant characteristics; at least, results will be discussed about the relationship between the three domains.

#### 4.1. Result and Discussion for Socio-Demographic Characteristics

**Table 4.1-a: Socio-demographic characteristics of the study participants (n=132)**

Variable	Categories	Frequency (Percentage) n (%)
Age	20-30	47 (36%)
	31-40	69 (52%)
	41-50	16 (12%)
Gender	Male	107 (81%)
	Female	25 (19%)
University*	AQU	3 (2%)
	AZU	9 (7%)
	IUG	68 (52%)
	KYTC	2 (1.5%)
	NSS	6 (5%)
	PCN	36 (27%)
	UCAS	7 (5%)
Qualifications	Diploma	30 (23%)
	Bachelor	92 (70%)
	Master	10 (7%)

**Table 4.1-b: Socio-demographic characteristics of the study participants (n=132)**

<b>Variable</b>	<b>Categories</b>	<b>Frequency (Percentage) n (%)</b>
<b>Graduation year</b>	1980 - 2000	12 (9%)
	2001-2010	72 (55%)
	2011-2018	44 (33%)
<b>Experience</b>	1-5 years	35 (26%)
	6-10 years	42 (32%)
	11-15 years	33 (25%)
	>15 years	22 (17%)
<b>Hospital**</b>	ADH	18 (14%)
	ANPH	39 (29%)
	AQH	15 (11%)
	ARH	8 (6%)
	BHH	12 (9%)
	EGH	14 (11%)
	KOH	13 (10%)
	NMC	13 (10%)
<b>Income</b>	< 1000 (NIS)	17 (13%)
	1000 -2000 (NIS)	86 (65%)
	2001 -3000 (NIS)	6 (4%)
	>3000 (NIS)	13 (10%)
<b>Number of Nurses every shift</b>	1	14 (11%)
	2	37 (28%)
	3	50 (38%)
	4	27 (20%)
	≥5	4 (3%)
<b>Working Hours Weekly</b>	<35 Hrs	20 (15%)
	35 Hrs	92 (70%)
	>35 Hrs	20 (15%)
<b>Number of Daily Visit Cases</b>	1-50 Cases	16 (12%)
	51-100 Cases	18 (14%)
	101-150 Cases	22 (17%)
	151-200 Cases	41 (31%)
	>200 Cases	35 (26%)

**Table 4.1-c: Socio-demographic characteristics of the study participants (n=132)**

<b>Variable</b>	<b>Categories</b>	<b>Frequency (Percentage) n (%)</b>
<b>Educational or Training Program</b>	Yes	70 (53%)
	No	62 (47%)
<b>Job Satisfaction 0%-100%</b>	Low (0%-50%)	52 (39%)
	Moderate (50%-70%)	47 (36%)
	High (71%-100%)	33 (25%)
	Mean	57
	S. Deviation	±25.6

\*University: AQU= Al- Quds University, AZU= Al- Azhar University, IUG= Islamic University of Gaza, KYTC= Khanyounis Training College, NSS= Nursing School – Shifa, PCN= Palestinian College of Nursing, UCAS= University College Applied Sciences.

\*\*Hospital: ADH= Al- Dora Hospital, ANPH= A-Naser Pediatric Hospital, AQH= Al- Aqsa Hospital, ARH= Al- Rantisi Hospital, BHH= Bit- Hanon Hospital, EGH= European Gaza Hospital, KOH= Kamal Odwan Hospital, NMC= Naser Medical Complex.

Tables (4.1-a,b,c) shows that one hundred thirty two (132) nurses are participate in the study, 81% were male. 52% of study participants were in age group (31-40) years and graduated from Islamic University. 70% of participants have bachelor and master degree. 58% of participants have less than 10 years of experience, more than two third of participants their income less than 2000 (NIS). 85% of participant nurses work more than 35hrs weekly and one third of participant work in ANPH alone. More than half of participants deal with more than 150 cases daily. More than one third of participants, their nurses team less three nurses' every shift. 53% of participants take courses of educational or training programs about emergency. Low satisfied participants toward their job were 39%, and another 36% of them were moderate satisfied.

### **Discussion of Participants Characteristics:**

Most of participants were male and have bachelor degree, in addition to more than half of participants their age between 31-40 years have less than 10 years of experience and take educational training about emergency cases; these finding conversed with different studies around the world. A Netherland study which was conducted by Peetoom (2016) revealed that the average age of participants was 45 years old, the average work experience was 16.4 years and the majority of participants were female. Another conversed result showed in Palestinian study that applied by Zubedeh, et al. (2016) found female more than male and participant age between 30-40 years, their experience above 15years, most of participants have diploma degree and didn't take enough educational training for fever management. Additional Ireland study which was conducted by Greensmith (2012) indicated that the majority of study participants were female their average age 30 years old, one third of them have bachelor degree and another one third have higher diploma in children's nursing. Another Australian study applied by Considine and Brennan (2007) identified associations between independent fever management decisions and participant characteristics, it influenced by experience, hours of employment, level of appointment, and post graduated qualifications. From my point of view, male nurses may reach to 60% from total number of nurses in Gaza strip and hospital policies were putting the new employed nurses in the emergency department for training for long times, moreover, the female nurses work at day shift only. So, that the most of nurses presented in emergency departments was young male with low experience, this may indicate knowledge deficit about importance of fever among children to deal with emergency cases that lead to delay of improving nurse's self-efficacy.

## 4.2. Results and Discussion of Nurses' Knowledge

**Table 4.2-a: Knowledge about childhood fever management for the study participants**

(n=132)

Knowledge Items	Correct	Not-Correct
	Frequency (n)	Frequency (n)
The nurse knows that fever is the most common reason between children to visit an emergency department.	126 (95.5%)	6 (4.5%)
The nurse knows that fever alone is an indicator for the administration of antipyretics.	100 (75.8%)	32 (24.2%)
The nurse knows that fever should treat by intensive way to prevent febrile convulsions.	12 (9.1%)	120 (90.9%)
The nurse knows that antipyretic medication should be given to all children with a temperature of 38°C or higher.	29 (22%)	103 (78%)
The nurse knows that regular administration of antipyretic medication may mask a fever indication of infective process.	74 (56.1%)	58 (43.9%)
Nurse prefers to use non-pharmacological measures to reduce child temperature.	87 (65.9%)	45 (34.1%)
The nurse plays an important role as an educator in fever management for their colleges and child family.	126 (95.5%)	6 (4.5%)
The nurse knows that febrile convulsions generally occur within 24hrs of a febrile associated illness.	34 (25.8%)	98 (74.2%)
The nurse knows that the risk factors for febrile convulsion include previous child and family history of febrile convulsion.	102 (77.3%)	30 (22.7%)
The nurse knows that Fever (38°C) during infection is beneficial.	88 (66.7%)	44 (33.3%)
The nurse knows that fever below 38°C without other symptoms needs treatment.	86 (65.2%)	46 (34.8%)
The nurse knows that it is necessary to confirm fever axillary with a thermometer prior to starting treatment.	122 (92.4%)	10 (7.6%)
The nurse knows that administration of antipyretics to children with fever to avoid febrile seizure only.	87 (65.9%)	45 (34.1%)
The nurse knows that administration of antipyretics to children with fever to avoid brain damage only.	93 (70.5%)	39 (29.5%)

**Table 4.2-b: Knowledge about childhood fever management for the study participants (n=132)**

Knowledge Items	Correct	Not-Correct
	Frequency (n)	Frequency (n)
The nurse knows that administration of antipyretics to children with fever to avoid combinations of brain damage and seizure.	97 (73.5%)	35 (26.5%)
Nurse considers that the fever is harmful to the child.	11(8.3%)	121 (91.7%)
The nurse knows pathophysiology of fever.	111 (84.1%)	21 (15.9%)
The nurse knows that antibiotics are beneficial in management fever due to bacterial infection.	121 (91.7%)	11 (8.3%)
Nurse manages fever according to evidence-based practices (EBP).	106 (80.3%)	26 (19.7%)
The nurse uses teaching technique as a way to deal with family stress and phobia.	111(84.1%)	21 (15.9%)
The nurse collaborates parents in the management of child fever to decrease stress.	118 (89.4%)	14 (10.6%)
The nurse has protocols for dealing with children with fever according to evidence-based practices.	72 (54.5%)	60 (45.5%)
Nurse mostly follows doctor’s order in the management of the febrile child.	89 (67.4%)	43 (32.6%)
Nurse have own assessment tool for assessing the febrile child.	96 (72.7%)	36 (27.3%)
Knowledge deficits between nurses may be barriers to communicating or discussing nursing practices with doctors.	37 (28%)	95 (72%)
In-service education conducts lectures as educational programs for nurses to update knowledge about emergency cases and fever management.	53 (40.2%)	79 (59.8%)
<b>Total</b>	<b>63.7%</b>	<b>38.5%</b>

Tables (4.2-a) and (4.2-b) shows that twenty-six questions asked for participants to describe the nurses’ knowledge about childhood management in emergency department. We represent (Correct) for right answer in participants questionnaire about knowledge, and represent (Not-Correct) for wrong answer and don’t know answer in participants Questionnaire. Nurse’s total knowledge percentage reach to 63.7% of participants and 36.2% of them were knowledge deficit.

### **Discussion of Nurses Knowledge:**

Nurse's knowledge revealed that the majority of nurses (95%) confirmed that fever is the commonest reason between children to visit emergency department, this result consistent with wide deferent studies. USA study published by American Academy of pediatrics by Sullivan and Farrar (2011) indicated that fever in a child is one of the most common symptoms managed by nurses, another Italian study conducted by Barbi, et al. (2017) showed that fever is one of the most frequent presenting complaints in emergency department visits, its common concern for parents and HCPs and remain a major cause of laboratory investigation and hospital admission. Additional Palestinian study applied on 100 nurses that conducted by Mwas and Abureesh (2016) it emphasized that fever is the most common reason for parents to seek medical health care. I think that presence of efficient nurses' knowledge could improve parental knowledge about managing febrile child by discharge recommendations and pamphlet instructions to help parental home management and reduce children revisit to emergency departments.

Three forth of participants (76%) knew that fever alone is an indicator for administering antipyretics, and they think that antipyretics may mask a fever indication of infective process. These results were not consistent with the evidence of UK guideline NICE (2013) showed that temperature reduction should not be a primary criterion of antipyretic administration. Another Korean review study that conducted by Sun and Sun (2010) revealed that antipyretics should not routinely be used with the sole aim of reducing body temperature in children with fever who are otherwise well. Additional Italian review study was conducted by Barbi, et al. (2017) showed that child should be evaluated as a potential symptom of an underlying condition due to exposure to endogenous pyrogens, and Vietnamese study which applied on parent and nurses was conducted by Tran (2014) agreed that regular antipyretic administration may hide some illness symptoms and affect

diagnosis. I believe that nurses giving antipyretics to prevent uncontrolled temperature and due to fear of convulsions that may negatively effects on child health like brain death.

Majority of participants (91%) knew that fever should treated aggressively to prevent febrile convulsion. The evidence of UK Guidelines that conducted by NICE (2013) that emphasize the risk of fever include increase metabolic demand, mild dehydration, and discomfort and these effects are generally mild and easily tolerated by most children and it's benign for children are at risk for febrile seizures. But the USA study was conducted by Avner (2009) revealed that some children should be treated aggressively when they unable to tolerate the increased metabolic demand due to fever, like children with pulmonary or cardiovascular disease, critically ill children, or children who are immunocompromised. I believed that the method of nursing intervention with cases depends on good clinical assessment for children that supported with good evidence base knowledge in addition to nurse's experience to deal with emergency cases.

Two third of participants (78%) define the temperature of 38°C to be fever. This consistent with USA study which conducted by Thompson and Kang (2012) that showed knowledge gap was as the majority of nurse participants could not distinguish hyperthermia from fever. another study applied in Vietnam by Hoang (2007) revealed that high percentage of nurses reporting temperatures as fever is due to the common site for measuring temperature being the axilla and the definition of fever stated in Pediatric Medicine textbook as a temperature of 37.5°C and above at the axilla or at 38°C and above at the rectal site. This supported by UK guideline of NICE (2013) that defined fever as an elevation of body temperature above the normal daily variation. Another study applied by (Vu, 2011) revealed that a temperature above 38°C can be considered fever but the clinician should also consider the daily variation and other physiological or environmental factors when they determine if a child is febrile. In my front of view nurses' incorrect definition of fever

may be influenced by the inconsistent references and information they received or they may not have received the recent update about fever definition.

Two third of participants (77%) knew that child and family history were a risk factor for febrile convulsion and (74%) disagree that febrile convulsion occur within 24Hrs of illness, These consequences corresponds with different studies, such as Ireland study which done for 119 nurses in one hospital that conducted by Greensmith (2012) and Vietnamese study applied by Tran (2014) which showed that most nurses believed that a history of febrile convulsions was a risk factor for a febrile convulsion and the child may have another febrile convulsion within 6 to 12 months. In other side the Vietnamese study which conducted by Tran (2014) disproved that febrile convulsions generally occur within the first 24 hours of a febrile illness. I think that nurses concern about febrile convulsion in dealing with febrile cases having a history of convulsions interestingly and sometimes aggressively was related to previous experience, but it isn't related to scientific evidence.

The majority of participants (96%) knew that nurses play the role of educator in fever management for colleagues and families. This finding supported with a study for Korean review form journal database and clinical guidelines from 1990 to 2009 which conducted by Sun and Sun (2010) that indicated pediatric nurses can play an important role by encouraging clinical research and enhancing research utilization in their practices, and educate parents about evidence-based fever management. Another consistent Italian study which applied for 378 HCPs which conducted by Rafaeli (2016) obtained that pediatric nurses give continuous contact with children during hospitalization and manage administration of antipyretics and analgesics, this indicate to be the primary target of education programs. In the line of these studies, I believed that improving nurse's knowledge and supported with evidence base between colleges, this will lead improve

educational role and reduce concerns between nurses and parents that lead to improve performance.

More than two third of the participant (73%) have owned assessment tool for assessing febrile child and they considered knowledge deficit between nurses was a barrier to communicate or discuss nursing practices with doctors, in addition to followed doctor order in order to management of fever. These findings are similar to Vietnamese study which conducted by Tran (2014) for 365 parents and 240 nurses that indicated that pediatric nurses mostly follow doctors' orders and knowledge deficits may be barriers to communicating or discussing nursing practices with doctors in order to provide better care for febrile children. I think that applying protocol for dealing with emergency cases and defining of physicians and nurses' duties, in order to have good knowledge to apply clinical assessment and minimize concerns about dealing with febrile cases to provide excellent practices.

Majority of the participants (92%) knew that antibiotics are beneficial for fever due to bacterial infection, and two third (66%) preferred to use non-pharmacological measures to reduce temperature. These consequences supported with evidence from UK guideline NICE (2013) and Italian systematic review guidelines from 2012 to 2015 which applied by chaiappini (2016) revealed that a clinical assessment alone help to identify these children with serious bacterial infections could lead to prompt antibiotic treatment, which may improve their outcome, and oral antibiotics should not be prescribed to children with fever without apparent source, parenteral rout recommended. Another studies for Vietnamese which conducted by Tran (2014) and Palestinian study applied for 100 physician and nurses conducted by Zubedah, et al. (2016) that showed the nurses have used different types of non-pharmacological methods to reduce the temperature some nurses used unproven/unsafe physical methods, (e.g., vinegar compresses and/or undressing the child)

if fever persisted one hour following an antipyretic. In the line of these findings a comprehensive assessment needed to identified the seriousness of illness and prescribed the treatment, and i preferred non-pharmacological methods if there is no evidence to administered antipyretics to prevent complication or overdosing.

More than half of the participants (67%) know that fever 38°C during infection is beneficial. This consequence meets multiple studies like the Germany study which was conducted by El-Radhi (2011), Italian guideline applied by Chiappini et al. (2012) for 388 parents and 480 pediatricians, and Vietnamese study conducted by Tran (2014) which supported the concept that fever is beneficial in humans and slows the replication of bacteria and viruses in the body and enhances the body's ability to fight infection by increasing phagocytosis and T-lymphocyte activity. I think that elevation of body temperature is a symptom of body defense to viral or bacterial infection, so that we should improving nurse's knowledge to minimize the concerns about fever harm, in addition to monitoring the febrile child and apply clinical assessment routinely.

More than half of the participants (65%) indicated that fever below 38°C without other symptoms not needed for treatment. This result consistent and supported with UK guidelines which conducted by NICE (2013) and Italian study applied by Chiappini, et al. (2012) revealed that majority of parents believed it necessary to treat children with low-grade fever without any other sign of illness, whereas the physicians and nurses did not. Moreover, the review study for journal database and guidelines from 1990 to 2009 which conducted by Sun & Sun (2010) confirmed that antipyretics should not routinely be used with the sole aim of reducing body temperature in children with fever who are otherwise well. From my point of view, the intervention with febrile children started to relieve the severity of illness symptoms and to reduce complain. Otherwise, nurses should assess febrile child and monitoring child condition to determine when fever should be treated.

Majority of participants (92%) confirmed fever measurement axillary with thermometer prior start treatment. This finding confirmed with UK guideline of NICE (2013) that recommended measuring body temperature in the axilla, using an electronic thermometer for infants less than 4 weeks of age and chemical dot or electronic thermometers in older. This adverse to American Academy of Pediatrics (AAP) (2008) that suggests rectal thermometry for children younger than 4 years of age and oral thermometry in older children. I think that axillary measurement for temperature is preferred because of safety and non-invasive and culturally not impressed to older children and their parents like rectally measurement.

Two third of the participant (66%) didn't administration antipyretics to avoid febrile seizure only, and two third of the study participants (71%) reluctant to administered antipyretics to avoid brain damage only, but (74%) confirmed that antipyretics administration to avoid both. These consequences were consistent with Palestinian study applied to 100 nurses and physician in primary health clinic and UNRWA which conducted by Zubedeh, et al. (2016) revealed that non-evidence-based management between nurses for febrile children in part of the most common concern of fever is febrile convulsion and brain damage and parent's education. Another Vietnamese study in the same line conducted by Tran (2014) showed that nurses believed that a low grade of fever was harmful and febrile convulsions were their main concern about fever. According to the USA study from American Academy of Pediatrics applied by Sullivan, et al. (2011) confirmed that the primary goal of treating the febrile child should be to improve the child's overall comfort rather than focus on the normalization of body temperature. I believed that convulsion that leads to brain death was concerns between nurses and parents. Indeed, these complications related severity of illness more than severity of elevation of

body temperature, and antipyretic administration given to relieve child complain and reduce severity of illness.

More than three fourth of the participants (84%) knew the pathophysiology of fever; in conversed direction the majority of the participants (92%) confirmed that fever is harmful to the children, these results meet findings of the USA study which conducted by Gordon (2014) that revealed misconceptions and unfounded fears regarding fever existed among parents and pediatric providers alike. This supported with Italian study which was conducted by Chiappini, et al. (2012) that emphasized the vast majority believes that fever is harmful. Indeed, these findings conversed the evidence from UK guidelines which conducted by NICE (2013) confirmed that fever is not harmful in most circumstances. From my point of view, we need for presence of knowledgeable specialized pediatric nurses in emergency departments to understand the physiology of the febrile response as well as common misconceptions regarding fever in order to promote safe and evidence-based fever management.

More than half of participants (55%) have protocols for dealing with febrile children and 80% managed fever according evidence base. These findings not corresponded with the percentage of total nurses knowledge 62% only for this study, these findings supported with many studies showed that there are knowledge deficit and misconceptions about fever management and its complications like Palestinian study which conducted by Zubedeh, et al. (2016), and review study for databases and guidelines from 2000 to 2015 which applied by Kim (2016), in addition to Italian study which done for parents and physicians which implemented by Chiappini, et al. (2012). Moreover, the USA study which conducted by Thompson and Kagan (2012) mentioned that the absence of protocols developed in an interdisciplinary manner, nurses chose rather to rely on trial and error or individual convention, they identified that a barrier to care were the decisions made by nurses. I

believe that presence of protocol based on recent guidelines and supported with evidence base will unique the method for dealing with febrile children between all nurses and HCPs in emergency departments; these will reduce nurses and parental concerns and improve performance.

Only (40%) of study participants received lectures or educational programs regarding fever management. More than two third (84%) of participants used teaching technique to deal with family stress and phobia, and (89%) of study participants collaborated parents in fever management to decrease stress. These consequences meet the local study which was conducted by Zubedeh, et al. (2016) for 100 nurses and physician which revealed that nurses didn't given enough education and not included within important subject related to fever such as fever cause, treatment, and management practices in same of evidence-based practices. Another supported study from Italy which was applied for 378 HCPs and conducted by Raffaelli, et al. (2016) showed that the main educational interventions should be concentrated on pediatric nurses and older parents, and those with older children or a lower educational level to reduce the unnecessary overloading of pediatric emergency departments. In the same line the Italian study which was applied by Chiappini, et al. (2012) that emphasized that parents consider pediatricians as their primary source of information and educational programs targeted to educate pediatricians may be an effective action to change the parents' understanding and management of fever. Previously a USA cross sectional study which was implemented by (Crocetti et al., 2001) revealed that nurses and HCPs are parents' primary source of fever management advice. From my point of view nurses are the most contact between HCPs with febrile children and their parents, so that they should have comprehensive knowledge about fever management to educate the parents and their colleges with the latest evidence.

**In conclusion**, the researcher affirms that the findings of the study concerning the knowledge between nurses in management of childhood fever are not in line with current recommendations. The finding of the mean percent about knowledge regarding childhood fever was 63.7%. Comparing with other studies its better than nurse’s knowledge in the Korean study that applied by Park & Kim (2016) was 42.9%, and another Ireland study which was conducted by Greensmith (2012) it revealed that overall knowledge on the 20 knowledge items was 50.9%. These knowledge scores are supported by other international studies conducted in England (Blumenthal, 2000); Israel (Sarrell et al., 2002); Australia (Brennan & Considine, 2007); USA (Thompson & Kagan, 2011); and the Netherland (Peetoom, 2016). In Summary, Presence of enough knowledge and skills between nurses which was qualified to dealing with febrile children can decrease barriers about changing their attitude and improving practices benefits that lead to high level of nurse’s efficacy.

### **4.3. Results and Discussion of the Relationship between Knowledge and Participants**

#### **Characteristics**

#### **4.3.1. Relationship between participant knowledge and age group (n=132):**

The investigator divided the total knowledge in to three categories: deficit (0%-50%), moderate (51%-75%), excellent (76%-100%).

**Table 4.3.1: Summary for relationship between participant knowledge and age groups**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Knowledge</b>	<b>Age</b>		0.97	0.61
	Less-than-30 n (%)	30Yrs or more n (%)		
<b>Deficit</b>	9 (32%)	19 (68%)		
<b>Moderate</b>	35 (38%)	57 (62%)		
<b>Excellent</b>	3 (25%)	9 (75%)		

Table (4.3.1) shows that 75% of participants with excellent knowledge their age were more than 30 years. There is no statistically significant relationship (sig= 0.61).

#### 4.3.2. Relationship between participant knowledge and gender (n=132):

**Table 4.3.2: Summary for relationship between participant knowledge and gender**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Knowledge</b>	<b>Gender</b>		0.61	0.78
	Male n (%)	Female n (%)		
	<b>Deficit</b>	24 (86%)      4 (14%)		
	<b>Moderate</b>	73 (79%)      19 (21%)		
	<b>Excellent</b>	10 (83%)      2 (17%)		

Table (4.3.2) shows that 86% of participants with deficit knowledge were male. There is no statistically significant relationship (sig= 0.78).

#### 4.3.3. Relationship between participant knowledge and university(n=132):

**Table 4.3.3: Summary for relationship between participant knowledge and university**

<b>Dependent Variable</b>	<b>Independent Variable</b>							<b>X<sup>2</sup></b>	<b>P Value</b>	
<b>Knowledge</b>	<b>University</b>							12.96	0.63	
	AQU n(%)	AZU n (%)	IUG n(%)	KYTC n (%)	NSS n (%)	PCN n (%)	UCAS n (%)			
	<b>Deficit</b>	0 (0)	3 (11)	13 (46)	0 (0)	1 (4)	8 (29)			2 (7)
	<b>Moderate</b>	2 (2)	5 (5)	47 (51)	1 (1)	5 (5)	26(28)			5 (5)
	<b>Excellent</b>	1 (6)	1 (8)	8(67)	1 (1)	0 (0)	2 (17)			0 (0)

Table (4.3.3) shows that 67% of participants with excellent knowledge were graduated from the Islamic University of Gaza. There is no statistically significant relationship (sig= 0.63).

#### 4.3.4. Relationship between participant knowledge and qualifications (n=132):

**Table 4.3.4: Summary for relationship between participant knowledge and qualifications**

Dependent Variable	Independent Variable		X <sup>2</sup>	P Value
<b>Knowledge</b>	<b>Qualifications</b>		0.17	0.95
	Diploma n (%)	Bachelor or more n (%)		
	<b>Deficit</b>	7 (25%)      21 (75%)		
	<b>Moderate</b>	20 (22%)      72 (78%)		
	<b>Excellent</b>	3 (25%)      9 (75%)		

Table (4.3.4) shows that 78% of participants with moderate knowledge were have bachelor and master degree. There is no statistically significant relationship (sig= 0.95).

#### 4.3.5. Relationship between participant knowledge and graduation years (n=132):

**Table 4.3.5: Summary for relationship between participant knowledge and graduation years**

Dependent Variable	Independent Variable			X <sup>2</sup>	P Value
<b>Knowledge</b>	<b>Graduation years</b>			2.87	0.58
	Before year of 2000	2001- 2010	2011- 2018		
	<b>Deficit</b>	3(11)      16(57)      9(32)			
	<b>Moderate</b>	9(10)      48(52)      35(38)			
	<b>Excellent</b>	0(0)      9(75)      3(25)			

Table (4.3.5) shows that 75% of participant with excellent knowledge their graduation year were between (2001- 2010). There is no statistically significant relationship (sig= 0.58).

#### 4.3.6. Relationship between participant knowledge and experience (n=132):

**Table 4.3.6: Summary for relationship between participant knowledge and experience**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Knowledge</b>	<b>Experience</b>		0.02	1.00
	Less than 10 years n (%)	10 years or more n (%)		
<b>Deficit</b>	16 (57%)	12 (43%)		
<b>Moderate</b>	54 (59%)	38 (41%)		
<b>Excellent</b>	7 (58%)	5 (42%)		

Table (4.3.6) shows that 59% of participants with moderate knowledge their experiences were less than 10 years. Above results shows that there were trends for relationship but didn't reached to statistical significant relationship (sig= 0.10).

#### 4.3.7. Relationship between participant knowledge and income (n=132):

**Table 4.3.7: Summary for relationship between participant knowledge and income**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Knowledge</b>	<b>Income</b>		1.32	0.59
	Less than 2000 n (%)	2000 or more n (%)		
<b>Deficit</b>	21 (84%)	4 (16%)		
<b>Moderate</b>	74 (86%)	12 (14%)		
<b>Excellent</b>	8 (73%)	3 (27%)		

Table (4.3.7) shows that 86% of participant with moderate knowledge their income were less than 2000 shekel. There is no statistically significant relationship (sig= 0.59).

**4.3.8. Relationship between participant knowledge and nurse's number (n=132):**

**Table 4.3.8: Summary for relationship between participant knowledge and nurse's number.**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Knowledge</b>	<b>Nurses Number</b>		1.94	0.42
	Two or less n (%)	Three or more n (%)		
<b>Deficit</b>	8 (29%)	20 (71%)		
<b>Moderate</b>	37 (40%)	55 (60%)		
<b>Excellent</b>	6 (50%)	6 (50%)		

Table (4.3.8) shows that 71% of participants having deficit knowledge were work as three or more nurses every shift. There is no statistically significant relationship (sig= 0.42).

**4.3.9. Relationship between participant knowledge and working hours (n=132):**

**Table 4.3.9: Summary for relationship between participant knowledge and working hours**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Knowledge</b>	<b>Working Hours</b>		2.4	0.39
	Less than 35Hrs n (%)	35Hrs or more n (%)		
<b>Deficit</b>	5 (18%)	23 (82%)		
<b>Moderate</b>	15 (16%)	77 (84%)		
<b>Excellent</b>	0 (0%)	12 (100%)		

Table (4.3.9) shows that 100% of participants with excellent knowledge were work more than 35hours weekly. There is no statistically significant relationship (sig= 0.39).

#### 4.3.10. Relationship between participant knowledge and cases number (n=132):

**Table 4.3.10: Summary for relationship between participant knowledge and cases number**

Dependent Variable	Independent Variable		X <sup>2</sup>	P Value
Knowledge	Cases Number		0.64	0.77
	Less than 100 n (%)	100 cases or more n (%)		
Deficit	8 (29%)	20 (71%)		
Moderate	24 (26%)	68 (74%)		
Excellent	2 (17%)	10 (83%)		

Table (4.3.10) shows that 83% of participants with excellent knowledge were deal with more than 100 hundred cases. There is no statistically significant relationship (sig= 0.77).

#### 4.3.11. Relationship between participant knowledge and educational program n=132):

**Table 4.3.11: Summary for relationship between participant knowledge and educational program**

Dependent Variable	Independent Variable		X <sup>2</sup>	P Value
Knowledge	Educational Program		2.25	0.36
	Yes n (%)	No n (%)		
Deficit	12 (43%)	16 (57%)		
Moderate	51 (54%)	41 (46%)		
Excellent	8 (59%)	4 (41%)		

Table (4.3.11) shows that 59% of participants with excellent knowledge were take educational or training program about emergency management. There is no statistically significant relationship (sig= 0.36).

#### 4.3.12. Relationship between participant knowledge and job satisfaction (n=132):

**Table 4.3.12: Summary for relationship between participant knowledge and job satisfaction**

Dependent Variable	Independent Variable			X <sup>2</sup>	P Value	
Knowledge	Job Satisfaction			4.25	0.38	
	0-50 n (%)	51-70 n (%)	71-100 n (%)			
	Deficit	15 (54%)	8 (29%)			5 (18%)
	Moderate	32 (35%)	34 (37%)			26 (28%)
	Excellent	3 (25%)	5 (42%)			4 (33%)

Table (4.3.12) shows that 54% of study participants with deficit knowledge their job satisfaction was (0%- 50%). There is no statistically significant relationship (sig= 0.38).

**In conclusion:** the investigator examined the relationship between nurses' knowledge and participants demographic characteristics (age, sex, qualification, university, experience, graduation year, income, nurses' number, cases number, working hours, educational programs, job satisfaction) regarding childhood fever management, there is no statistical significant relationship found.

#### **Discussion of the Relationship between Knowledge and Participants Characteristics:**

The negative presence of relationship between nurse's knowledge and participant's demographic characteristics was corresponded with a study which was conducted by Tran (2014) revealed that Vietnamese nurses' knowledge, beliefs and practices were influenced by their educational level, pediatric nursing experience and having undertaken pediatric courses. Another supported study applied by Greensmith (2012) found a small positive correlation between total knowledge scores and length of experience, which correlates with knowledge and years of experience in a children's setting. At the opposite side the

Palestinian study which was conducted by Zubedeh, et al. (2016) revealed that nursing performance not affected by demographic variable and appear no difference between nursing performance and demographic variables (gender, age, experience, qualification, hospital type, and income). Korean study that conducted by Jeong and Kim, (2015) emphasized that methods of learning affect participants satisfaction, and they said “learners’ satisfaction was higher for the blended learning program than the face-to-face learning”. I believed that participants knowledge may influenced by socio-demographic characteristic for the participants, the findings of this study may relate to small sample size and large number of male participants, this affected negatively to presence of relationship between them.

#### 4.4. Results and Discussion of Nurses Attitude

##### 4.4.1. Attitude for study Participants:

**Table 4.4.1-a: Attitude for study participants (n = 132)**

Attitude Items	Categories	Frequency Percentage n (%)	Mean	SD	Rank
Nurse has positive attitude to deal with febrile children as a defense mechanism	S. Disagree	1(1%)	4.28	0.81	1
	Disagree	5(4%)			
	Neutral	9(7%)			
	Agree	58(44%)			
	S. Agree	59(44%)			
Nurse believes that convulsions are fever complications that will lead to brain damage if untreated.	S. Disagree	3(2%)	4.18	0.99	2
	Disagree	11(8%)			
	Neutral	4(3%)			
	Agree	55(42%)			
	S. Agree	59(45%)			
Nurse believes that antipyretic can prevent febrile convulsion.	S. Disagree	2(1.5%)	3.91	1.04	5
	Disagree	18(13.6%)			
	Neutral	12(9%)			
	Agree	58(44%)			
	S. Agree	42(32%)			

**Table 4.4.1-b: Attitude for study participants (n = 132)**

Attitude Items	Categories	Frequency Percentage n (%)	Mean	SD	Rank
The nurse thinks that administer antipyretic are safe to discharge child from the emergency department.	S. Disagree	18(14%)	3.02	1.32	9
	Disagree	40(30%)			
	Neutral	16(12%)			
	Agree	38(30%)			
	S. Agree	20(15%)			
The nurse thinks that regular antipyretic administration may hide some illness symptoms.	S. Disagree	7(5%)	3.66	1.11	7
	Disagree	18(14%)			
	Neutral	15(11%)			
	Agree	65(49%)			
	S. Agree	27(21%)			
Nurse believes that use antipyretic may affect diagnosis.	S. Disagree	6(5%)	3.38	1.18	8
	Disagree	33(25%)			
	Neutral	22(17%)			
	Agree	47(36%)			
	S. Agree	24(18%)			
The nurse thinks that antipyretic may administered to decrease children complain.	S. Disagree	2(2%)	3.95	0.85	4
	Disagree	9(7%)			
	Neutral	12(9%)			
	Agree	80(61%)			
	S. Agree	29(22%)			
Nurse believes that administration of paracetamol only is effective in the management of fever.	S. Disagree	21(16%)	2.67	1.21	10
	Disagree	53(40%)			
	Neutral	16(12%)			
	Agree	33(25%)			
	S. Agree	9(7%)			
Nurse believes that combined administration of paracetamol and ibuprofen is more effective in the management of fever.	S. Disagree	7(5%)	3.98	1.12	3
	Disagree	11(8%)			
	Neutral	9(7%)			
	Agree	56(42%)			
	S. Agree	49(37%)			
The nurse thinks that administer of antipyretics will reduce family anxiety.	S. Disagree	4(3%)	3.80	1.01	6
	Disagree	14(11%)			
	Neutral	16(12%)			
	Agree	68(52%)			
	S. Agree	30(23%)			

Table (4.4.1-a & 4.4.1-b) shows the participants' attitude toward childhood fever in emergency departments, this show frequency and percentage of participants answers, we

coded the categories as Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5). Then we calculate the mean and SD for the findings then ranking.

#### 4.4.2. Nurse's attitude within two categories:

**Table 4.4.2: Nurses' attitude within positive and negative categories (n=132)**

Attitude items	Positive	Negative
	Frequency Percentage n (%)	Frequency Percentage n (%)
Nurse has positive attitude to deal with febrile children as a defense mechanism.	117 (88.6%)	15 (11.4%)
Nurse believes that convulsions are fever complications that will lead to brain damage if untreated.	14 (10.6%)	118 (89.4%)
Nurse believes that antipyretic can prevent febrile convulsion.	20 (15.1%)	112 (84.9%)
The nurse thinks that administer antipyretic are safe to discharge child from the emergency department.	58 (43.9%)	74 (56.1%)
The nurse thinks that regular antipyretic administration may hide some illness symptoms.	92 (69.7%)	40 (30.3%)
Nurse believes that use antipyretic may affect diagnosis.	71 (53.8%)	61 (46.2%)
The nurse thinks that antipyretic may administered to decrease children complain.	109 (82.6%)	23 (17.4%)
Nurse believes that administration of paracetamol only is effective in the management of fever.	42 (31.8%)	90 (68.2%)
Nurse believes that combined administration of paracetamol and ibuprofen is more effective in the management of fever.	105 (79.5%)	27 (20.5%)
The nurse thinks that administer of antipyretics will reduce family anxiety.	98 (74.2%)	34 (25.8%)
<b>Total</b>	<b>(55%)</b>	<b>(45%)</b>

Table (4.4.2) shows the participants' attitude toward childhood fever in emergency department, based on the latest evidence base we distinguish between positive participants' attitudes and negative attitude according to his answer in the questionnaire, then we change the five to two categories (Positive and Negative). (55%) of participants were positive attitude and the result show (45%) of negative attitude between of participants.

### **Discussion of Nurses Attitude:**

Most of study participants (89%) have positive attitude to deal with fever as defense mechanism, in adverse same percentage they were not correctly believed that convulsions are fever complication will lead to brain damage untreated fever. These consequences corresponded with Israeli occupation study which was conducted by Sarrell, et al. (2002), and review for the databases and guidelines from 1990 to 2009 which was conducted by Sun and Sun (2010) both showed that fever is important immunological defense. Another USA study from American Academy of Pediatrics which was conducted by sullivan, et al. (2011) supported the evidence and revealed that fever is a physiologic mechanism that has beneficial effects in fighting infection, and there is no evidence that fever itself worsens the course of an illness or neurologic complications. The local cross-sectional study applied on Nablus hospitals which was implemented by Mwas and Abureesh (2016) emphasized that many nurses report concern that their child's fever may cause convulsions or brain damage. I believed that the presence of fever is a mechanism of defense toward infections and the complications like convulsions, brain death and any neurological impairment mostly related to severity of illness more than related to high fever.

More than three forth (85%) of participants believed that antipyretics can prevent febrile convulsion and more than half of participants think that administering of antipyretics are not safe to discharge child from emergency department. This result conversed to Italian guidelines from systematic review between years 2012 to 2015 which was conducted by Chiappini et al. (2016), Korean review from years 2000 to 2015 which was conducted by Kim (2016) and UK Guideline which was implemented by NICE (2013) that emphasized on preventive use of antipyretics is not recommended for the prevention of febrile convulsions in children. It's consistent with Vietnamese cross-sectional study which was applied by Tran (2014) indicated that nurses continue to believe that antipyretics can

prevent febrile convulsions, or would be unsafe for a febrile child to leave the emergency department. But this conversed with analytic Switzerland study which was conducted by Gehri et al. (2005) reported that to be safe to discharge febrile children if their temperature was under 39.5°C and the child was not in a high-risk group. I think that preventive administration of antipyretics used depending on previous trial and the children feel more comfort, these concerns delivered from deficit knowledge to deal with febrile children and affect nurses' practices, so that the treatment of antipyretics should be given for needed cases. Applying good clinical assessment for children and giving discharge instructions for febrile children is enough to discharge if child didn't have any signs of risk.

More than two third of participants (83%) think that antipyretics given to reduced child complain, moreover, the administration of antipyretics will hide illness symptoms, and may affect diagnosis. These findings corresponded with different studies such as systematic review study from age 2007 to 2017 in Colombia which was conducted by Tobón (2017), Italian guidelines which was implemented by Chiappini et al. (2016) and Korean review applied by Kim, (2016) those revealed that antipyretics should be administered with the purpose to control the child's discomfort rather than decreasing the temperature itself. In another cross-sectional Vietnamese study which was conducted by Tran (2014) mentioned about regular antipyretic administration may hide some illness symptoms and affect diagnosis. From my point of view, most of infection was related viral source and antipyretics given to children to relive illness severity and decrease discomfort; early comprehensive assessment should be applied before administration of antipyretics that affect illness symptoms and may affect the diagnosis.

More than two third (68%) of study participants believed that administration paracetamol only not effective to manage fever and more than three fourth of study participants (80%) think that administration of paracetamol and ibuprofen is more effective. These findings

conversed with the Netherland review study which was conducted by Niehues (2013) obtained that paracetamol is the antipyretic agent of first choice; because longstanding clinical experience has shown that it is safe. Moreover, there is no scientific evidence indicating any significant superiority of ibuprofen over paracetamol. Different studies conducted such as Italian guidelines reviewing study which was applied by Chiappini et al. (2016); UK Guidelines which was applied by NICE (2013) and Korean review which was conducted by Kim (2016) confirmed that combined and alternating use of paracetamol and ibuprofen is discouraged, considering risk, benefit and error. But the USA study from American Academy of Pediatrics which was applied by Sullivan, et al. (2011) that conversed these findings and indicated that ibuprofen is considered safe to give to children above 6 months of age it's as effective as or more than acetaminophen. American Academy of Pediatrics AAP (2008) cautions providers who recommend alternating antipyretics to give thorough instructions to parents to avoid incorrect dose. I believed that the nurses need the fast effect on child condition by combination or alteration of antipyretics to decrease parental concerns and decrease work load. But i conclude that paracetamol is more safety and effective than ibuprofen and the combination or alternative are not supported significantly as more effective in management children fever.

Ninety-eight of participants (74%) believed that administering of antipyretics will reduce family anxiety. This consequence corresponded with Vietnamese cross-sectional study which was conducted by Tran (2014) that supported believes in using of antipyretics to reduce parental anxiety, child's discomfort and temperature. Additionally, the study which was conducted by Crocetti et al. (2001) and applied on Latino parents was reported that parents feel very worried about fever. It could be that the family anxiety will reduced when they feel nurse's interest in dealing with their febrile child and return to normal temperature, not related to administration of antipyretics.

**In conclusion**, the findings of this study showed that the nurses' attitude in management of childhood fever didn't meet recent recommendations; the mean percent of positive attitude regarding childhood fever was 55%. Comparing with other studies, it's corresponding with Italian study that applied by Raffaelli, et al. (2016) reported that their attitude not in one line. Another supported study from Ireland which was conducted on 119 nurses by Greensmith (2012) revealed that nurses have both appropriate and inappropriate attitude towards fever and fever management. And the study which was applied on Vietnamese nurses reported that more positive beliefs about the benefit of fever reported than previous studies (Tran, 2014). In summary, presence of importance of nurse's knowledge about fever, this change their attitude and minimize the barriers that may affect negatively the nurse's performance and quality of practices for dealing with childhood fever between nurses.

#### **4.5.Results and Discussion of the Relationship between Attitude and Participants**

##### **Demographic Characteristics**

##### **4.5.1. Relationship between participant's attitude and age (n=132):**

**Table 4.5.1: Summary for relationship between participant's attitude and age**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Attitude</b>	<b>Age</b>		0.09	0.86
	Less-than-30 n (%)	30 or more n (%)		
	<b>Negative</b>	24(37%)		
<b>Positive</b>	23 (34%)	44 (66%)		

Table (4.5.1) shows that 66% of participants with positive attitude their age were more than 30 years. There is no statistically significant relationship (sig= 0.86).

#### 4.5.2. Relationship between participant's attitude and gender (n=132):

**Table 4.5.2: Summary for relationship between participant's attitude and gender**

Dependent Variable	Independent Variable		X <sup>2</sup>	P Value
Attitude	Gender		2.16	0.18
	Male n (%)	Female n (%)		
Negative	56 (86%)	9 (14%)		
Positive	51 (76%)	16 (24%)		

Table (4.5.2) shows that 86% of participants with negative attitude and 76% of participants with positive attitude were male. There is no statistically significant relationship (sig= 0.18).

#### 4.5.3. Relationship between participant's attitude and university (n=132):

**Table 4.5.3: Summary for relationship between participant's attitude and university**

Dependent Variable	Independent Variable							X <sup>2</sup>	P Value
Knowledge	University							11.1	0.10
	AQU n(%)	AZU n(%)	IUG n(%)	KYTC n(%)	NSS n(%)	PCN n (%)	UCAS n (%)		
Negative	1 (1%)	2 (3%)	40 (62%)	1 (1%)	1 (5%)	15 (23%)	5 (8%)		
Positive	2 (3%)	7 (10%)	28 (42%)	1 (1%)	5 (7%)	21 (31%)	2 (3%)		

Table (4.5.3) shows that 62% of participants with negative attitude their graduations from Islamic university. Above results shows that there were trends for relationship but didn't reached to statistical significant relationship (sig= 0.10).

**4.5.4. Relationship between participant’s attitude and qualifications (n=132):**

**Table 4.5.4: Summary for relationship between participant’s attitude and qualifications**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Attitude</b>	<b>Qualifications</b>		3.93	0.06
	Diploma n (%)	Bachelor or more n (%)		
<b>Negative</b>	10 (15%)	55 (84%)		
<b>Positive</b>	20 (30%)	47 (70%)		

Table (4.5.4) shows that 84% of participants with negative attitude and 70 % of participants with positive attitude were have bachelor or master degree. Above results shows that there were trends for relationship but didn’t reached to statistical significant relationship (sig= 0.06).

**4.5.5. Relationship between participant’s attitude and graduation year (n=132):**

**Table 4.5.5: Summary for relationship between participant’s attitude and graduation year**

<b>Dependent Variable</b>	<b>Independent Variable</b>			<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Attitude</b>	<b>Graduation Year</b>			1.33	0.55
	Less than 2000	2001-2010	2011-2018		
<b>Negative</b>	4 (6%)	37 (57%)	24 (37%)		
<b>Positive</b>	8 (12%)	36 (54%)	23 (34)		

Table (4.5.5) shows that 57% of participants with negative attitude and 54% of participants with positive attitude their graduation year were between 2001 and 2010. There is no statistically significant relationship (sig= 0.55).

#### 4.5.6. Relationship between participant's attitude and experience

**Table 4.5.6: Summary for relationship between participant's attitude and experience**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Attitude</b>	<b>Experience</b>		0.54	0.48
	Less than 10 years n (%)	10 years or more n (%)		
	<b>Negative</b>	40 (62%)		
<b>Positive</b>	37 (55%)	30 (45%)		

Table (4.5.6) shows that 62% of participants with negative attitude and 55% of participants with positive attitude their experience were less than 10 years of age. There is no statistically significant relationship (sig= 0.48).

#### 4.5.7. Relationship between participant's attitude and income (n=132):

**Table 4.5.7: Summary for relationship between participant's attitude and income**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Attitude</b>	<b>Income</b>		1.20	0.32
	Less than 2000 n (%)	2000 or more n (%)		
	<b>Negative</b>	52 (88%)		
<b>Positive</b>	51 (81%)	12 (19%)		

Table (4.5.7) shows that 88% of participants with negative attitude and 81% of participants with positive attitude their income was less than 2000 shekel. There is no statistically significant relationship (sig= 0.32).

**4.5.8. Relationship between participant’s attitude and nurse’s number (n=132):**

**Table 4.5.8: Summary for relationship between participant’s attitude and nurse’s number**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Attitude</b>	<b>Nurse Number</b>		0.16	0.72
	Two or less n (%)	Three or more n (%)		
<b>Negative</b>	24 (37%)	41 (63%)		
<b>Positive</b>	27 (40%)	40 (60%)		

Table (4.5.8) shows that 63% of participants with negative attitude and 60% of participants with positive attitude their numbers were three or more during shifts. There is no statistically significant relationship (sig= 0.72).

**4.5.9. Relationship between participant’s attitude and working hours weekly (n=132):**

**Table 4.5.9: Summary for relationship between participant’s attitude and working hours weekly**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Attitude</b>	<b>Working Hours</b>		0.81	0.47
	Less than 35Hrs n (%)	35Hrs or more n (%)		
<b>Negative</b>	8(12%)	57 (88%)		
<b>Positive</b>	12 (18%)	55 (82%)		

Table (4.5.9) shows that 88% of participants with negative attitude and 82% of participants with positive attitude were work more than 35hours weekly. There is no statistically significant relationship (sig= 0.47).

**4.5.10. Relationship between participant’s attitude and daily visit cases (n=132):**

**Table 4.5.10: Summary for relationship between participant’s attitude and daily visit cases**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Attitude</b>	<b>Daily Cases</b>		0.48	0.55
	Less than 100 n (%)	100cases or more n (%)		
<b>Negative</b>	15 (23%)	50 (77%)		
<b>Positive</b>	19 (28%)	48 (72%)		

Table (4.5.10) shows that 77% of participants with negative attitude and 72% of participants with positive attitude were deal with more than 100 cases daily. There is no statistically significant relationship (sig= 0.55).

**4.5.11. Relationship between participant’s attitude and education or training program (n=132):**

**Table 4.5.11: Summary for relationship between participant’s attitude and education or training program**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Attitude</b>	<b>Education or Training Program</b>		1.91	0.22
	Yes n (%)	NO n (%)		
<b>Negative</b>	31 (48%)	34 (52%)		
<b>Positive</b>	40 (60%)	27 (40%)		

Table (4.5.11) shows that 60% of participants with positive attitude were take educational or training program. There is no statistically significant relationship (sig= 0.22).

**4.5.12. Relationship between participant’s attitude and job satisfaction (n=132):**

**Table 4.5.12: Summary for relationship between participant’s attitude and job satisfaction**

<b>Dependent Variable</b>	<b>Independent Variable</b>			<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Attitude</b>	<b>Job Satisfaction</b>			0.78	0.69
	0-50 n (%)	51-70 n (%)	71-100 n (%)		
	<b>Negative</b> 26 (40%)	24 (37%)	15 (23%)		
<b>Positive</b>	24 (36%)	23 (34%)	20 (30%)		

Table (4.5.12) shows that 40% of participants with negative attitude were not satisfied, other 36% of participants with positive attitude were not satisfied. There is no statistically significant relationship (sig= 0.69).

**In conclusion:** we examine the relationship between nurses attitude regarding fever management and participant characteristics (age , sex, qualification, university, experience, graduation year, income, nurses number, cases number, working hours, educational programs, job satisfaction), there is no statistically significant relationship found.

**Discussion of Relationship between Attitude and Participants Socio-demographic Characteristics:**

The negative presence of relationship between nurse’s attitude and participant’s demographic characteristics was corresponded with some studies and conversed with others. The study which was conducted by Tran (2014) revealed that Vietnamese nurses’ beliefs were influenced by their educational level, pediatric nursing experience and having undertaken pediatric courses. More interestingly, attendance at pediatric conferences did not influence nurses' knowledge but it did influence their total and beliefs about temperature measurement and educating parents about fever management. In conversed

side the study which was conducted by (Greensmith 2012) supported my study results and showed that there was no significant difference in attitude scores for those who had a higher diploma, and those who did not, a small positive correlation between attitude scores, and years of experience in a children’s hospital setting. I think that the result of the study corresponding with some studies that disprove the relationship between attitude and participant’s characteristics, and the result may persist even if the sample size increased, this affected negatively to presence of significant relationship between them.

#### 4.6. Results and Discussion of Nurses Practices

##### 4.6.1. Practice of study participants:

**Table 4.6.1-a: Practices of study participants (n = 132)**

**The practice domain in the questionnaire their answers were (Yes/No).**

<b>Practices Items</b>	<b>Categories</b>	<b>Frequency (Percentage) n (%)</b>
The nurse uses hand palpation to measure temperature.	No	105 (79.5%)
	Yes	27 (20.5%)
The nurse cleans thermometer with alcohol before measuring to prevent infection.	No	14 (10.6%)
	Yes	118 (89.4%)
The nurse usually uses orally routs to administer antipyretics.	No	56 (42.4%)
	Yes	76 (57.6%)
The nurse takes efficient time in measuring child fever.	No	10 (7.6%)
	Yes	122 (92.4%)
The nurse uses ice packs in the groin to reduce the fever.	No	106 (80.3%)
	Yes	26 (19.7%)
The medical record was a barrier to the nursing documentation of descriptive findings.	No	74 (56.1%)
	Yes	58(43.9%)
Nurse’s practices influenced according to child temperature.	No	15 (11.4%)
	Yes	117 (88.6%)
Nurse’s practices influenced by the history of febrile convulsion.	No	10 (7.6%)
	Yes	122 (92.4%)

**Table 4.6.1-b: Practices of study participants (n = 132)**

<b>Practices Items</b>	<b>Categories</b>	<b>Frequency (Percentage) n (%)</b>
Nurse's practices influenced by parental requests.	No	81 (61.4%)
	Yes	51 (38.5%)
Nurse awake child to give antipyretic medication during sleeping time.	No	54 (40.9%)
	Yes	78 (59.1%)
Nurse gives antipyretic medication regularly as prescribed even if no fever.	No	53 (40.2%)
	Yes	79 (59.8%)
The nurse uses wet towels as the first intervention to manage fever.	No	56 (42.2%)
	Yes	76 (57.6%)
Nurse calculate the dose of antipyretic (paracetamol, Ibuprofen) depends only on child weight only.	No	36 (27.3%)
	Yes	96 (72.7%)

Table (4.4.1-a & 4.4.1- b) shows the descriptive statistics of participants answers for practices domain.

#### **4.6.2. Nurses' practices within two categories:**

This table show the correct answer in the questionnaire as (applied Practice) and not correct answer in the questionnaire as (Not- applied Practice).

**Table 4.6.2-a: Nurses' practices within two categories (n=132)**

<b>Practices Items</b>	<b>Applied Practices</b>	<b>Not-Applied Practices</b>
	<b>Frequency (Percentage) n (%)</b>	<b>Frequency (Percentage) n (%)</b>
The nurse uses hand palpation to measure temperature.	105 (79.5%)	27 (20.5%)
The nurse cleans thermometer with alcohol before measuring to prevent infection.	118 (89.4%)	14 (10.6%)
The nurse usually uses orally routs to administer antipyretics.	76 (57.6%)	56 (42.4%)
The nurse takes efficient time in measuring child fever.	122 (92.4%)	10 (7.6%)
The nurse uses ice packs in the groin to reduce the fever.	106 (80.3%)	26 (19.7%)
The medical record was a barrier to the nursing documentation of descriptive findings.	74 (56.1%)	58 (43.9%)

**Table 4.6.2-b: Nurses practices within two categories (n=132)**

Practices Items	Applied Practices	Not-Applied Practices
	Frequency (Percentage) n (%)	Frequency (Percentage) n (%)
Nurse's practices influenced according to child temperature.	117 (88.6%)	15 (11.4%)
Nurse's practices influenced by the history of febrile convulsion.	122 (92.4)	10 (7.6%)
Nurse's practices influenced by parental requests.	51 (38.5%)	81 (61.4%)
Nurse awake child to give antipyretic medication during sleeping time.	54 (40.9%)	78 (59.1%)
Nurse gives antipyretic medication regularly as prescribed even if no fever.	79 (59.8%)	53 (40.2%)
The nurse uses wet towels as the first intervention to manage fever.	76 (57.6%)	56 (42.2%)
Nurse calculate the dose of antipyretic (paracetamol, Ibuprofen) depends only on child weight only.	36 (27.3%)	96 (72.7%)
<b>Total</b>	<b>(66.2%)</b>	<b>(33.8%)</b>

Tables (4.6.2-a & 4.6.2-b) shows that the change of (Yes & No) categories to (Applied & not Applied), after recoding applied to distinguish between participants answers according the evidenced base. Total mean of nurse's applied practices regarding childhood fever management was 66.2% among study participants.

### **Discussion of Nurses Practices:**

More than three fourth of study participants (80%) didn't use hand palpation to measure the temperature. This finding conversed with evidence that obtained by UK guideline NICE (2013) that decided the detection of fever by palpation was probably as good as the other alternatives to oral and rectal temperature measurements and considered that it was important for these facts to be recognized by healthcare professionals. The finding

conversed by different studies like, a Vietnamese cross-sectional study conducted by (Tran 2014) revealed that nurses' temperature-taking methods in developing countries are unknown, another UK study which was conducted by Blumenthal (2000) showed that some nurses used hand palpation to detect fever and considered this method as good as a thermometer, however, most reported taking children's temperature in the axilla. From my point of view, hand palpation may use as clinical assessment to predict presence of fever and should be confirmed by thermometer before any intervention. But the evidence in guideline considered the peoples who live in poor areas or families didn't have thermometer.

Majority of participants (89.4%) cleaned the thermometer with alcohol before measuring to prevent infection. It's a salient percentage compared with finding of the study which was conducted by Tran (2014), and the USA study which was applied by Thompson and Kagan (2012) revealed that nurses did not clean thermometers appropriately, and exposing children to the risk of infection; they did not use a plastic sheath for the thermometer or clean the thermometer with alcohol wipes or soap and water. From my point of view the thermometer remained in closed container wet with alcohol all the times and cleans at the time of measuring the temperature, this mean that the thermometer already all the time drowned in alcohol, this way meets the evidence and minimize the risk for infection.

More than half of participants (57.5%) used orally route to administer antipyretics. This supported with evidence of Italian review guidelines which was applied by Chiappini, et al. (2016) and UK guidelines which implemented by NICE (2013) that showed antipyretics should be administered orally; rectal administration is discouraged except in the setting of vomiting. Additionally, the local study which was conducted by Zubedeh, et al. (2016) emphasized that oral acetaminophen is more effective than the rectal form. I believed that

oral paracetamol is the most available type of antipyretics in emergency departments and the evidence supports this consequence due to safety and simplicity in applying.

More than three fourth participants (80%) participants didn't put ice packs in the groin to reduce fever, and more than half participants (57.6%) used wet towel (Tepid sponge) as first intervention to manage fever and give antipyretic medication regularly even if no fever. These consequences corresponding with the evidence that didn't support tepid sponge, and disproved putting ice packs in the groin to reduce fever. Many studies applied by UK guidelines that applied by NICE (2013), Vietnamese study which was applied by Tran (2014), review of guidelines and data base that conducted by Kim (2016) and USA study that applied by Thompson and Kagan (2012) revealed that these ways were ineffective at reducing temperature and increase discomfort, that lead to increased shivering as the temperature set point has been raised and the body is working to increase the temperature to the new threshold. The reviewing Italian guideline study which was conducted by Chiappini, et al. (2016) and the reviewing Sweden study that applied by Aurell and Billström (2012) emphasized that antipyretics are not recommended to administer as prophylactic to reduce the incidence of fever and local reaction in vaccinated children to prevent febrile convulsion. I think that presence of advanced knowledge and education between nurses according evidence base, the intervention with febrile child become more effective and prevent dispensable administration of antipyretics.

Majority of participants (92.4%) influenced their practices due to child temperature and history of convulsion, but only (38.5%) participants influenced their practices due to parental request. These findings coincided with the quasi- experimental Australian study which was conducted with Edwards (2007) revealed that nurses performed a comprehensive assessment to make an informed decision, however, factors influencing their practices include medical orders, the child's temperament, a history of febrile

convulsions, parental requests, colleagues and ward norms. Another reviewing Netherland study which was applied by Niehues (2013) determined that whether a child is seriously ill on the basis of a detailed history, precise observation and clinical examination. I believed that the inclusive assessment for febrile child should be holistic approach to take accurate decision about intervention.

Two third of study participants (74%) told that medical record is not barrier for nursing documentation. These results conversed to a comparison USA study which was applied by Thompson and Kagan (2012) that revealed the medical record was a barrier to documentation of descriptive findings, written communication about the patient's unique experience of fever is often absent from the patient record that lead to delayed or inappropriate fever management. Moreover, Korean study which was conducted by Hu et al. (2016) emphasized that using of effective strategies to standardize the protocol for fever management, and update nursing documentation will improve patient outcomes. From my point of view, presence of work load pushed the physician to document subjective and objective data for admission cases only, other cases the comprehensive assessment was taken verbally without documentation; in addition to nursing documentation applied for children with serious illness.

Nearly two third of study participants (59%) answered to waked child during sleeping time to give antipyretic medications. This consequence conversed with the evidence of UK Guidelines that applied by NICE (2013), and Australian study which was applied by Edwards (2007) alerted HCPs and parents to waken a sleeping febrile child and preferring to observed them, and recommendations to promote consistent fever management practices. other studies were consistent with the findings, such as a study which was applied by Zubedeh, et al. (2016) showed that majority of participant beliefs about the need to wake sleeping children to administer antipyretics, and the study for Walsh et al. (2007)

revealed that Australian nurses 39% need to wake sleeping children to administer antipyretics. In the line of these studies, beliefs about the need to wake sleeping children to administer antipyretics were greater than those demonstrated in recent evidence. So, that improving knowledge deficit between nurses and HCPs can minimize these concerns and show better practices in dealing with febrile children.

Three fourth of participants (72.7%) calculate the antipyretics dose depends on child weight only. This finding corresponding with the study that conducted by Niehues (2013) reported that Netherland HCPs should be dose antipyretic drugs by body weight, not by age, and supported with the local study applied by Zubedeh, et al. (2016) revealed that Palestinian nurses and physician administered of antipyretics rectally depends on the child's body weight rather than age. I believe that the dose of antipyretics administrations depends on child weight rather than age considering drug manufacture according to many references.

**In conclusion,** I think that the findings of this study show that the practices of nurses in management of childhood fever didn't meet the least evidence; the finding of the mean percent of applying good practices was 66.2% for management childhood fever. These consequences consistent with different studies, such as (Zubedah & Mayaleh, 2016), (Tran, 2014), (Chiappini, et al., 2012), and (Greensmith, 2012), all of these studies emphasized that nurses' low knowledge levels, and inappropriate attitude towards fever and fever management, results in inconsistent practices which are not based on latest evidence. In summary, appropriate nurses' knowledge and attitude can decrease nurses' barriers to change their practices according latest evidence base, these changes can lead to improve nurses' self-efficacy and quality performance toward dealing with febrile children.

## 4.7. Results and Discussion of the Relationship between Practices and Participants

### Characteristics

#### 4.7.1. Relationship between practices and participant's age (n=132):

**Table 4.7.1: Summary for relationship between practices and participant's age**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Practices</b>	<b>Age</b>		0.70	0.54
	Less-than-30 n (%)	30 or more n (%)		
<b>Not-Applied</b>	6 (46%)	7 (54%)		
<b>Applied</b>	41 (34%)	78 (66%)		

Table (4.7.1) shows that 66% of participants whose applied good practices their age more than 30 years. There is no statistically significant relationship (sig= 0.54).

#### 4.7.2. Relationship between practices and participant's gender (n=132):

**Table 4.7.2: Summary for relationship between practices and participant's gender**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Practices</b>	<b>Gender</b>		1.19	0.46
	Male n (%)	Female n (%)		
<b>Not-Applied</b>	12 (92%)	1 (8%)		
<b>Applied</b>	95 (80%)	24 (20%)		

Table (4.7.2) shows that 80% of participants whose applied good practices were male.

There is no statistically significant relationship (sig= 0.46).

#### 4.7.3. Relationship between practices and participant's university (n=132):

**Table 4.7.3: Summary for relationship between practices and participant's university**

Dependent Variable	Independent Variable							X <sup>2</sup>	P Value
Practices	University							3.40	0.80
	AQU	AZU	IUG	KYTC	NSS	PCN	UCAS		
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)		
Negative	0(0%)	0(0%)	7(47%)	0(0%)	1(8%)	5(38%)	0(0%)		
Positive	3(7%)	9(8%)	61(52%)	2(2%)	5(4%)	31(26%)	7(6%)		

Table (4.7.3) shows that 52% of participants whose applied good practices were graduated from Islamic University of Gaza. There is no statistically significant relationship (sig= 0.80).

#### 4.7.4. Relationship between practices and participant's qualification (n=132):

**Table 4.7.4: Summary for relationship between practices and participant's qualification**

Dependent Variable	Independent Variable		X <sup>2</sup>	P Value
Practices	Qualification		1.86	0.29
	Diploma	Bachelor or more		
	n (%)	n (%)		
Not-Applied	1 (8%)	12 (92%)		
Applied	29 (24%)	90 (76%)		

Table (4.7.4) shows that 92% of participants whose not-applied good practices their qualification bachelor and master degree. There is no statistically significant relationship (sig= 0.29).

**4.7.5. Relationship between practices and participant’s graduation year (n=132):**

**Table 4.7.5: Summary for relationship between practices and participant’s graduation year**

<b>Dependent Variable</b>	<b>Independent Variable</b>			<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Practices</b>	<b>Graduation year</b>			0.70	0.82
	Less than year 2000	2001- 2010	2011-2018		
<b>Not-Applied</b>	1(8%)	6(46%)	6(46%)		
<b>Applied</b>	11(9%)	67(56%)	41(35%)		

Table (4.7.5) shows that 56% of participants whose applied good practices their graduation year between (2001- 2010) and 35% of them their graduation year between (2011- 2018) regarding childhood fever. There is no statistically significant relationship (sig= 0.82).

**4.7.6. Relationship between practices and participant’s experience (n=132):**

**Table 4.7.6: Summary for relationship between practices and participant’s experience**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Practices</b>	<b>Experience</b>		0.12	0.77
	Less than 10 years n (%)	10 years or more n (%)		
<b>Not-Applied</b>	7 (54%)	6 (46%)		
<b>Applied</b>	70 (59%)	49 (41%)		

Table (4.7.6) shows that 59% of participants whose applied good practices their experience less than 10 years regarding childhood fever. There is no statistically significant relationship (sig= 0.77).

#### 4.7.7. Relationship between practices and participant's income(n=132):

**Table 4.7.7: Summary for relationship between practices and participant's income**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Practices</b>	<b>Income</b>		0.69	0.48
	Less than 2000 n (%)	2000 or more n (%)		
<b>Not-Applied</b>	12 (92%)	1(8%)		
<b>Applied</b>	91 (84%)	18 (16%)		

Table (4.7.7) shows that 92% of participants whose not-applied good practices their income less than 2000 shekel regarding childhood fever management. There is no statistically significant relationship (sig= 0.48).

#### 4.7.8. Relationship between practices and participant's nurse number(n=132):

**Table 4.7.8: Summary for relationship between practices and participant's nurse number**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Practices</b>	<b>Nurse Number</b>		1.47	0.25
	Less than 3 n (%)	Three or more n (%)		
<b>Not-Applied</b>	3 (23%)	10 (77%)		
<b>Applied</b>	48 (40%)	71 (60%)		

Table (4.7.8) shows that 77% of participants whose not-applied good practices working with three or more nurses' every shift regarding childhood fever management. There is no statistically significant relationship (sig= 0.25).

#### 4.7.9. Relationship between practices and participant's working hours (n=132):

**Table 4.7.9: Summary for relationship between practices and participant's working hours**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Practices</b>	<b>Working Hours</b>		2.57	0.22
	Less than 35Hrs n (%)	35Hrs or more n (%)		
<b>Not-Applied</b>	0 (0%)	13 (100%)		
<b>Applied</b>	20 (17%)	99 (83%)		

Table (4.7.9) shows that 100% of participants which not-applied good practices working with more than 35 hours weekly regarding childhood fever management. There is no statistically significant relationship (sig= 0.22).

#### 4.7.10. Relationship between practices and participant's daily cases number (n=132):

**Table 4.7.10: Summary for relationship between practices and participant's daily cases number**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Practices</b>	<b>Cases Number</b>		2.46	0.18
	Less than 100 n (%)	100 cases or more n (%)		
<b>Not-Applied</b>	1 (8%)	12 (92%)		
<b>Applied</b>	33 (28%)	86 (72%)		

Table (4.7.10) shows that 92% of participants which not-applied good practices dealing with more than 100 cases daily regarding childhood fever management. Above results showed that there were trends for relationship but didn't reached to statistically significant relationship (sig= 0.18).

**4.7.11. Relationship between practices and participant’s educational or training program (n=132):**

**Table 4.7.11: Summary for relationship between practices and participant’s educational or training program**

<b>Dependent Variable</b>	<b>Independent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>	
<b>Practices</b>	<b>Educational or Training Program</b>			0.34	0.77
	Yes n (%)	NO n (%)			
<b>Not-Applied</b>	6 (46%)	7 (54%)			
<b>Applied</b>	65 (55%)	54 (45%)			

Table 4.7.11 shows that 55% of participants which applied good practices were take educational or training programs about emergency regarding childhood fever management. There is no significant relationship (sig= 0.77)

**4.7.12. Relationship between practices and participant’s job satisfaction (n=132):**

**Table 4.7.12: Summary for relationship between practices and participant’s job satisfaction**

<b>Dependent Variable</b>	<b>Independent Variable</b>			<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Practices</b>	<b>Job Satisfaction</b>			0.42	0.81
	0-50 n (%)	51-70 n (%)	71-100 n (%)		
<b>Not-Applied</b>	6 (46%)	4 (31%)	3 (23%)		
<b>Applied</b>	44 (37%)	43 (36%)	32 (27%)		

Table (4.7.12) shows that 37% of participants which applied good practices are not satisfied and 36% of them were moderate satisfied, 46% of participants which not applied good practices were not satisfied regarding childhood fever management. There is no statistically significant relationship (sig= 0.81).

**In conclusion:** we examine the relationship between nurses practices regarding fever management and participant characteristics (age, sex, qualification, university, experience, graduation year, income, nurses' number, cases number, working hours, educational programs, job satisfaction), there is no significant relationship found.

#### **Discussion of Relationship between Practices and Participants Characteristics:**

The negative presence of relationship between nurse's practices and participant's demographic characteristics not corresponded with some studies. The study which was conducted by (Tran 2014) revealed that Vietnamese nurses' practices were influenced by their educational level, nursing experience and having educational or training courses. Another French study that applied by Bertille (2015) showed that Significant practices variations were associated with characteristics of the child (age, fever level and diagnosis) and HP (profession and experience). Additional conversed Australian study applied by Considine and Brennan (2007) which found the associations between independent fever management decisions and participant characteristics, it influenced by experience, hours of employment, level of appointment, and post graduated qualifications. I think that negative relationship between practices and participants characteristics related to small sample size, moderate experiences and high percentage of low satisfaction between participants, this affect negatively to presence of significant relationship between them.

#### 4.8. Results and Discussion of the Relationship between Participants' Knowledge, Attitude and Practices

##### 4.8.1. Relationship between participants' knowledge and attitude (n=132):

**Table 4.8.1: Summary for the relationship between participants' knowledge and attitude**

Independent Variable	Dependent Variable		X <sup>2</sup>	P Value
Knowledge	Attitude		3.03	0.11
	Negative Attitude (0%- 60%) n (%)	Positive Attitude (61%-100%) n (%)		
	Knowledge deficit (0-60%)	22(42%)		
Good knowledge (61%-100%)	34(43%)	45(57%)		

Table (4.8.1) shows that 58% of participants with good knowledge were positive attitude and 58% of knowledge deficit participants were negative attitude in management of childhood fever. Above results showed that there were trends for relationship but didn't reached to statistically significant relationship (sig= 0.11).

##### 4.8.2. Relationship between participants' knowledge and practices (n=132):

**Table 4.8.2: Summary for the relationship between participants' knowledge and practices**

Independent Variable	Dependent Variable		X <sup>2</sup>	P Value
Knowledge	Practices		2.75	0.13
	Bad Practices (0%-50%) n (%)	Good Practices (51%-100%) n (%)		
	Knowledge deficit (0-60%)	45(85%)		
Good knowledge (61%-100%)	5(6%)	74(94%)		

Table (4.8.2) shows that 94% of good knowledge participants were applied good practices, and 85% of knowledge deficit participants were applied good practices. Above results shows that there were trends for relationship but didn't reached to statistically significant relationship (sig= 0.13).

#### 4.8.3. Relationship between participants' attitude and practices (n=132):

**Table 4.8.3: Summary for the relationship between participants' attitude and practices**

<b>Dependent Variable</b>	<b>Dependent Variable</b>		<b>X<sup>2</sup></b>	<b>P Value</b>
<b>Attitude</b>	<b>Practices</b>		0.12	0.77
	Bad Practices (0%-50%) n (%)	Good Practices (51%-100%) n (%)		
	<b>Negative Attitude (0%-60%)</b>	7(11%)      58(89%)		
<b>Positive Attitude (61%-100%)</b>	6(9%)	61(91%)		

Table (4.8.3) shows that 91% of positive attitude participants were applied good practices, and 89% of negative attitude participants were applied good practices, without statistically significant relationship (sig= 0.77).

#### **Discussion of Relationship between participant's knowledge, attitude and practices:**

Several studies reviewed searching for a relationship between three domains, the negative relationship between total knowledge and total attitude for participants conversed with the study which was conducted by Greensmith (2012) showed that the non-parametric Spearman's rho statistic found there were only a small, positive, though statistically significant correlation between total knowledge and total attitude scores. Other negative

relationship between attitude and practices and between knowledge and practices not supported or conversed with any previous studies.

**In Summary,** across-sectional study performed on pediatric nurses in emergency departments at governmental hospitals in order to identify their knowledge, attitude, and practices toward childhood fever management. The results of this study are not consistent with evidence base protocol NICE (2013), Pediatric Clinical Practices textbook (Vu, 2011) and AAP (2008), but corresponding with other studies related to childhood fever management, like Chiappini, et al. (2017), Kim (2016), Tran (2014), Edwards (2007) and other different studies. The gap founded between current management and scientific evidence guidelines, but there is not statistically significant relationship between socio demographic characteristics and participants knowledge or with attitude or practices, in addition to there isn't statistically significant relationship between knowledge, attitude and practices domains. Nurses consider the temperature 38°C to be fever; moreover, they consider fever to be harmful to child, nurses concerned about febrile convulsion and brain damage and other unrealistic concerns and misconceptions. The common practices for fever management include measuring the child temperature, administering antipyretics and applied tepid sponging. Nurse's knowledge, experience and training programs reflect on management of child fever and focus on comfort, quite environment, fluid intake, appropriate antipyretics and monitoring child condition.

There are many factors influencing nurses' fever management practices. Nurses need to acknowledge the presence of these factors and their influences on fever management practices. Through improvement, peer discussions nurses will be better placed to make informed decision about fever management, maintaining consistent practices and educate parents about fever management practices.

## **Chapter 5: Conclusion and Recommendations**

### **5.1. Conclusion:**

Most of nurses' were males, their age group 31-40 years, most of them have bachelor degree, half of them with less than 10 years of experience, they work less than 3 nurses every shift, most of them dealing with more than 150 visits daily. The study results revealed that the socio-demographic data weren't determinant factors affecting nurse's knowledge, attitude, and practices regarding childhood fever management. The level of knowledge, attitude and practices for nurses regarding childhood fever are not consistent with the latest evidence-based practices, but it corresponding with different studies.

The nurse's knowledge 62% shows positive points regarding dealing with febrile child, but there are important points still negatively present without support by scientific evidence. Total positive attitude reached to 51%, this showed that concerns presence between nurses regarding complications from elevated temperature, these concerns not significantly affected on the knowledge or practices for participants in management of febrile children. The mean percentage of nurses' practices in this study was reached to 66%, this revealed in appropriate management for children with fever. All of these findings reflect shortage in a process of decision making which need good knowledge and positive attitude to reflect in good management among nurses for dealing with childhood fever.

Pediatric nurses play an important role in management of febrile children in applying assessment, planning, diagnosis, intervention and evaluation of practices, in addition to deal with families' worries to minimize their anxiety and maintaining quite environment during fever management. Pediatric nurses should be targeted in educational programs and

improvement skills trainings according to the latest evidence based about dealing with childhood fever.

## **5.2.Recommendations:**

Nurses need consistent evidenced based fever management information and interventions to inform healthcare policy, practices. Further education is required to improve nurses' knowledge of fever and fever management.

### **The recommendations and suggestions of this study directed to:**

#### **5.2.1. Hospitals' in-service education:**

1. Dissemination of the current recommendations about management of fever among HCPs in order to avoid mistakes and sometimes risky attitude, common therapeutic errors, and the unnecessary overloading of emergency department resources.
2. Implementation of continuous educational program for nurses by using the latest guidelines regarding the proper management of the febrile child. This may be an effective action to change the nurses' understanding and management of fever.
3. Ward-based compulsory seminars or workshops were considered an ideal educational tool to improve fever management practices.
4. Fever management is also an important issue for newly employed nurses particularly those concerned with fever management. Therefore, fever management must be included in new nurses' orientation.
5. Evaluation and development of educational interventions in emergency department lead improve the quality of nursing care in the management of childhood fever. So that future fever information provision should focus on improving fever management and practical skills.

### **5.2.2. MoH and policy maker:**

1. Pediatric nurses should be the priority targets among HCPs for educational or training programmes and workshops to keep health care provider up to date with least evidence base practices.
2. The MoH and decision makers should be recommended to formulate unique protocol for dealing with febrile children in all health care associations in Palestine.
3. Implementation and periodic update of available guidelines represent a basic to affecting appropriate clinical behavior of HCPs regarding the management of fever in childhood.
4. Using effective methods in training programs to improve nurse's knowledge, concerns and practices for dealing with febrile children, such as: peer-led education programme, post-registration education programs, and using blended learning which combining face-to-face and online learning components.
5. Decision makers should be recommended for improving nursing curriculum in different colleges and universities according latest evidence based.

### **5.2.3. Nurses:**

1. The suggestion toward nurses that the education should not focus on fever definition and treatment only, but also about accurate temperature taking and assessment methods.
2. Nurses should educate parents and families to decrease their stress and anxiety by using deferent methods such as: Video-Discharge Instructions in the pediatric emergency department, written discharge plan and copied pamphlets for reducing revisit and minimize materials usage.

#### **5.2.4. Further researches:**

1. The implementation of further studies about this target should answer about causes of high daily visit cases of childhood fever to emergency departments and the impact of fever phobia among HCPs and parents on our health care system.
2. Future studies should focus on the evaluation and comparison of the most effective techniques for temperature measurement in children according to the latest evidence-based practices for evaluation of feverish children.
3. Researches are needed in the areas of reducing children re-visit and work load by developing diagnostic testing, application of discharge protocol.

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## **Annexes**

### **7.1 Consent Form**

Dear Participant

I am Mohammed S. Rabee, and I am studying with College of Health Profession, Master Pediatric Nursing at Al-Quds University Gaza Strip. We are doing a research on all nurses who work in pediatric emergency units in the Ministry of Health (MOH) Hospitals. Your participation in this interview is voluntary.

I would like to answer the questions that submitted in fulfillment of the requirement for the master degree about:

#### **Nurses' Knowledge, Attitude, and Practices in the Management of Childhood Fever in Emergency Departments at Governmental Hospitals in Gaza Strip**

The questionnaire includes sensitive and intimate questions; this probably takes about 15 minutes. If you do not have time to do the interview right now, we can arrange to come back at a later time. I would like to assure you that all information collected from you will be used only in scientific reports, and will be strictly confidential without any mention of your name.

Information gathered from the study will be used to improve programs that promote the knowledge, attitude and practices for nurses at emergency units. In case you want to know more about this study, or in the event that any harm will arise from asking our questions, we refer you to see Dr. Hamza A. Eljawad the coordinator at Gaza office for Al-Quds University, Tel: 0599852755.

So we hope you will give accurate answers.

## 7.2 Questionnaire:

Questionnaire Number:

### SOCIO-DEMOGRAPHICAL DATA:

Socio-Demographical Data						
No	Item	Variations				
1.	Age (years)	20-30	31-40		41-50	
2.	Gender	Male			Female	
3.	University					
4.	Qualification	Diploma	Bachelor	Master	PhD	
5.	Graduation year					
6.	Experience	1-5	6-10	11-15	>15	
7.	Hospital					
8.	Income monthly( shekel)	<1000	1000-2000	2001-3000		>3000
9.	Number of nurses every shift	1	2	3	4	>5
10.	Working hours weekly	<35hrs	35hrs			>35hrs
11.	Number of daily visit cases	1-50	51-100	101-150	151-200	>200
12.	Educational or training program about emergency management	Yes			No	
13.	Job satisfaction	0%-100%				

**KNOWLEDGE DOMAIN**

<b>Knowledge (K)</b>				
<b>No</b>	<b>Item</b>	<b>Yes</b>	<b>Don't Know</b>	<b>No</b>
<b>k.1.</b>	The nurse knows that fever is the most common reason between children to visit an emergency department.			
<b>k.2.</b>	The nurse knows that fever alone is an indicator for the administration of antipyretics.			
<b>k.3.</b>	The nurse knows that fever should treat by intensive way to prevent febrile convulsions.			
<b>k.4.</b>	The nurse knows that antipyretic medication should be given to all children with a temperature of 38°C or higher.			
<b>k.5.</b>	The nurse knows that regular administration of antipyretic medication may mask a fever indication of infective process.			
<b>k.6.</b>	Nurse prefers to use non-pharmacological measures to reduce child temperature.			
<b>k.7.</b>	The nurse plays an important role as an educator in fever management for their colleges and child family.			
<b>k.8.</b>	The nurse knows that febrile convulsions generally occur within 24hrs of a febrile associated illness.			
<b>k.9.</b>	The nurse knows that the risk factors for febrile convulsion include previous child and family history of febrile convulsion.			
<b>k.10.</b>	The nurse knows that Fever (38°C) during infection is beneficial.			
<b>k.11.</b>	The nurse knows that fever below 38°C without other symptoms needs treatment.			
<b>k.12.</b>	The nurse knows that it is necessary to confirm fever axillary with a thermometer prior to starting treatment.			
<b>k.13.</b>	The nurse knows that administration of antipyretics to children with fever to avoid febrile seizure only.			

<b>k.14.</b>	The nurse knows that administration of antipyretics to children with fever to avoid brain damage only.			
<b>k.15.</b>	The nurse knows that administration of antipyretics to children with fever to avoid combinations of brain damage and seizure.			
<b>k.16.</b>	Nurse considers that the fever is harmful to the child.			
<b>k.17.</b>	The nurse knows pathophysiology of fever.			
<b>k.18.</b>	The nurse knows that antibiotics are beneficial in management fever due to bacterial infection.			
<b>k.19.</b>	Nurse manages fever according to evidence-based practices (EBP).			
<b>k.20.</b>	The nurse uses teaching technique as a way to deal with family stress and phobia.			
<b>k.21.</b>	The nurse collaborates parents in the management of child fever to decrease stress.			
<b>k.22.</b>	The nurse has protocols for dealing with children with fever according to evidence-based practices.			
<b>k.23.</b>	Nurse mostly follows doctor's order in the management of the febrile child.			
<b>k.24.</b>	Nurse have own assessment tool for assessing the febrile child.			
<b>k.25.</b>	Knowledge deficits between nurses may be communicating or discussing nursing practices with doctors.			
<b>K.26.</b>	In-service education conducts lectures as educational programs for nurses to update knowledge about emergency cases and fever management.			

**ATTITUDE DOMAIN**

<b>Attitude (A)</b>						
<b>No</b>	<b>Items</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly disagree</b>
<b>A.1.</b>	Nurse has positive attitude to deal with febrile children as a defense mechanism					
<b>A.2.</b>	Nurse believes that convulsions are fever complication that will lead to brain damage if untreated.					
<b>A.3.</b>	Nurse believes that antipyretic can prevent febrile convulsion.					
<b>A.4.</b>	The nurse thinks that administer antipyretic are safe to discharge child from the emergency department.					
<b>A.5.</b>	The nurse thinks that regular antipyretic administration may hide some illness symptoms.					
<b>A.6.</b>	Nurse believes that use antipyretic may affect diagnosis.					
<b>A.7.</b>	The nurse thinks that antipyretic may administered to decrease children complain.					
<b>A.8.</b>	Nurse believes that administration of paracetamol only is effective in the management of fever.					
<b>A.9.</b>	Nurse believes that combined administration of paracetamol and ibuprofen is more effective in the management of fever.					
<b>A.10.</b>	The nurse thinks that administer of antipyretics will reduce family anxiety.					

**PRACTICES DOMAIN**

<b>Practices (P)</b>			
<b>No</b>	<b>Item</b>	<b>Yes</b>	<b>No</b>
<b>P.1.</b>	The nurse uses hand palpation to measure temperature.		
<b>P.2.</b>	The nurse cleans thermometer with alcohol before measuring to prevent infection.		
<b>P.3.</b>	The nurse usually uses orally routs to administer antipyretics.		
<b>P.4.</b>	The nurse takes efficient time in measuring child fever.		
<b>P.5.</b>	The nurse uses ice packs in the groin to reduce the fever.		
<b>P.6.</b>	The medical record was a barrier to the nursing documentation of descriptive findings.		
<b>P.7.</b>	Nurse's practices influenced according to child temperature.		
<b>P.8.</b>	Nurse's practices influenced by the history of febrile convulsion.		
<b>P.9.</b>	Nurse's practices influenced by parental requests.		
<b>P.10.</b>	Nurse wake-up child to give antipyretic medication during sleeping time.		
<b>P.11.</b>	Nurse gives antipyretic medication regularly as prescribed even if no fever.		
<b>P.12.</b>	The nurse uses wet towels as the first intervention to manage fever.		
<b>P.13.</b>	Nurse calculate the dose of antipyretic (paracetamol, Ibuprofen) depends only on child weight only.		

**Thank you for your cooperation**

## 7.3 Helsinki Approval



# المجلس الفلسطيني للبحوث الصحي

## Palestinian Health Research Council

تعزيز النظام الصحي الفلسطيني من خلال مأسسة استخدام المعلومات البحثية في صنع القرار  
Developing the Palestinian health system through institutionalizing the use of information in decision making

### Helsinki Committee For Ethical Approval

**Date:** 05/02/2018      **Number:** PHRC/HC/334/18

**Name:** MOHAMMED S. RABEE      الاسم:

We would like to inform you that the committee had discussed the proposal of your study about:      نفيكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:

**Nurses' knowledge, Attitude, and Practice in the Management of Childhood Fever in Emergency Departments at Governmental Hospitals in Gaza Strip.**

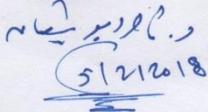
The committee has decided to approve the above mentioned research. Approval number PHRC/HC/334/18 in its meeting on 05/02/2018      و قد قررت الموافقة على البحث المذكور عاليه بالرقم والتاريخ المذكوران عاليه

**Signature**

Member



Member



**Chairman**



**Genral Conditions:-**

1. Valid for 2 years from the date of approval.
2. It is necessary to notify the committee of any change in the approved study protocol.
3. The committee appreciates receiving a copy of your final research when completed.

**Specific Conditions:-**

**E-Mail:** pal.phrc@gmail.com

Gaza - Palestine      غزة - فلسطين  
شارع النصر - مفترق العيون

## 7.4 Ministry of Health Approval

State of Palestine  
Ministry of health



دولة فلسطين  
وزارة الصحة

التاريخ: 22/02/2018  
رقم المراسلة: 196816

السيد: رامي عيد سليمان العبداله المحترم

مدير عام بالوزارة /الإدارة العامة لتنمية القوى البشرية - /وزارة الصحة

السلام عليكم

### الموضوع/ تسهيل مهمة الباحث/ محمد ربيع

// التفاصيل

بخصوص الموضوع أعلاه، يرجى تسهيل مهمة الباحث/ محمد صابر ربيع  
الملتحق ببرنامح ماجستير التمريض - كلية المهن الصحية - جامعة القدس أبوديس في إجراء بحث بعنوان :-  
"Nurses' Knowledge, Attitudes, and Practiee the management of Childhood Fever in  
Emergency Department at Governmental Hospitals in Gaza Strip"  
حيث الباحث بحاجة لتعبئة استبانة من عدد من الممرضين العاملين في أقسام الطوارئ في المستشفيات التي تقدم خدمات الأطفال  
في وزارة الصحة الفلسطينية، بما لا يتعارض مع مصلحة العمل وضمن أخلاقيات البحث العلمي، ودون تحمل الوزارة أي أعباء أو  
مسئولية.  
ونفضلوا بقبول التحية والتقدير،  
ملاحظة / تسهيل المهمة الخاص بالدراسة أعلاه صالح لمدة: 4 أشهر من تاريخه.

محمد ابراهيم محمد السرساوي  
مدير دائرة/الإدارة العامة لتنمية القوى البشرية -



## 7.5 Action Plan

The study takes 10 months; from Dec., 2017 till October 2018. This period was accomplished as illustrated in the below time table:

### Time Table Activities:

Activity	Dec 2017	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	Jun 2018	Jul 2018	Aug 2018	Sep 2018	Oct 2018
Development of proposal	■	■									
Ethical clearance from Helsinki committee			■								
MOH approval			■								
Piloting				■							
Data collection					■	■					
Data entry							■				
Data analysis							■	■			
Research writing									■	■	
Dissemination of findings											■

## ملخص البحث باللغة العربية

### عنوان البحث:

دراسة المعرفة والسلوك والممارسات للمرضيين العاملين في أقسام الاستقبال في التعامل مع حمى الطفولة في المستشفيات الحكومية في قطاع غزة.

إعداد: محمد صابر محمد ربيع

إشراف: د. أحمد نجم

### ملخص البحث:

تعتبر حمى الطفولة من أكثر الأسباب التي تستدعي مراجعة أقسام الطوارئ لطلب الرعاية الصحية. يعتبر العاملان في المجال الصحي المصدر الأساسي للمعلومات بالنسبة للوالدين للتعرف على طرق التعامل مع حمى الطفولة.

هدفت هذه الدراسة إلى تحديد المعرفة والاتجاهات والممارسات للمرضيين العاملين في أقسام الاستقبال تجاه التعامل مع حمى الأطفال في المستشفيات الحكومية والعوامل التي تؤثر عليها. طبقت هذه الدراسة على جميع أقسام استقبال الأطفال في المستشفيات الحكومية في الفترة ما بين أبريل إلى يونيو 2018م. صممت الدراسة بشكل كمي وصفي ومأخوذة بشكل قطعي و جمعت المعلومات من المشاركين وعددهم 132 ممرض عن طريق استبانة حوارية. تم اختيار العينة بطريقة غير عشوائية للعاملين في أقسام الاستقبال من الممرضين وأدخلت النتائج بشكل رقمي وكانت نسبة الاستجابة 94%. تم استخدام الوصف الإحصائي والاستنتاجي لفحص مستوى المعرفة والاتجاهات والممارسات للممرضين. تم تنفيذ دراسة تجريبية للتأكد من وضوح وصحة محاور الدراسة وبنودها.

نتائج الدراسة توضح أن معدل المعرفة والاتجاهات والممارسات بين الممرضين كانت (62%)، (51%)، (66%) بالترتيب، هذه النتائج لا تتوافق مع أحدث القواعد الإرشادية الدولية ولكنها تتناسب مع نتائج الدراسات المحلية والدولية التي تم القيام بها لنفس الهدف. وأثارت الدراسة قلق غير مبرر تجاه بعض النقاط منها إعطاء مخفضات الحرارة، والمضاعفات التي يمكن أن تؤدي إلى التشنجات وتلف خلايا الدماغ، هذه المضاعفات تزيد من قلق الوالدين مع وجود الحمى لدى أطفالهم. وتركزت نقاط الضعف الخاص بتطبيقات الممرضين في التعامل مع حمى الطفولة على استخدام مخفضات الحرارة، واستخدام الفوط الاسفنجية المبللة لخفض درجة الحرارة، بالإضافة إلى أن التوثيق الطبي في تذكرة المريض يعتبر عائق أمام التوثيق التمريضي. وبينت النتائج أن المميزات الشخصية للممرضين المشاركين ليس لها تأثير على معرفتهم وتوجهاتهم وممارساتهم في التعامل مع حمى الطفولة.

الممرضين بحاجة لمعلومات متكاملة عن طريق تطبيق برنامج تعليمي وإنشاء بروتوكول موحد للعاملين في المجال الصحي لتحسين توجهاتهم والوصول لتقديم خدمة متميزة في التعامل مع حمى الطفولة.