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**Assessment of Nurses' Knowledge and Practice Related
to Nursing Care of Children with Bronchiolitis
in Gaza Strip**

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to Nursing Care of Children with Bronchiolitis
in Gaza Strip**

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Thesis Approval

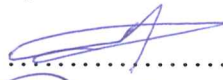


**Assessment of Nurses' Knowledge and Practice Related to Nursing Care of
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Dedication

To those who did seek to provide better support in a way to motivate me for success through which I learnt to move on forward with wisdom and patience. This is to my dear father.

The one that has an awful lot of support and to my mother whom my heart spoke to.

Additionally, I send this to who like me such as my dear brothers and sisters.

And to those who did the best to teach me in a way that flourishes my education way as well as success such as my dear teachers.

And to those who stayed long with me to move on forward with success and stood shoulder to shoulder with me to achieve what we look for which is the flower of our education such as my dear friends.

Mohammed Hosni Mansour

Declaration

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

Signed:

Mohammed Hosni Mansour

Date:..../..../....

Acknowledgement

First of all, praise to Allah, the lord of the world, and peace and blessings of Allah be upon our prophet Muhammad, all thanks for Allah who granted me the capability to accomplish this thesis.

I would like to express my deepest thanks to all the staff at Al Quds University for the knowledge and skills I gained through my study. I would like to thank many people who were a source of inspiration.

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I would like to convey my warm thanks to all the nurses who are working in the pediatric department in European Gaza Hospital, Al Tahreer Hospital, Al - Aqsa Hospital, Al-Nasr Hospital and Al-Durra Hospital for their cooperation during data collection.

Special thanks to my friends, and all those who contributed to the completion of this study, thank you very much.

Abstract

Bronchiolitis is considered one of the earliest and most common causes of hospitalization among young children during their first 2 years of life. Bronchiolitis is the leading cause of hospitalization for infants with an estimated 3.4 million admissions globally every year. The aim of this study was to assess the nurses' knowledge and practice related to nursing care of children with bronchiolitis in GS. The researcher used a descriptive, cross-sectional design in this study. The sample of the study was census sample and 124 nurses of both sexes with different grades who are working at pediatric department in the five governmental hospitals in GS (European Gaza Hospital, Al Tahreer Hospital, Al Aqsa Hospital, Al Nasr Hospital and Al Durra Hospital). For data collected by researcher used structured self-administered questionnaire about knowledge and practice. Data analyzed by using spss version 22. The results of the study showed that the mean age of nurses was 28.22 ± 5.95 years. The overall average of knowledge of the study participants about care of children with bronchiolitis was 66.78%. Moreover, the overall average of practice of care for children with bronchiolitis was 53.93%. The study concluded that of study participants have inadequate level of knowledge and practicing about care of patients with bronchiolitis. The recommendations were encourage decision makers to develop continuous education activities for nurses to increase knowledge and practice of the nurses skills and establish of educational poster in nurses office contains most important interventional activities for bronchiolitis children.

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Abbreviations

AAP	American Academy of Pediatrics
ABG	Arterial Blood Gas
ADH	Antidiuretic Hormone
ANOVA	Analysis of Variance
CF	Cystic Fibrosis
CHD	Congenital Heart Disease
CLD	Chronic Liver Disease
CLDI	Chronic Lung Disease of Infancy
CPAP	Continuous Positive Airway Pressure
CPGs	Clinical Practice Guidelines
CPT	Chest Physiotherapy
CRP	C-Reactive Protein
CSF	Cerebrospinal Fluid
DNA	Deoxyribonucleic Acid
ECG	Electrocardiogram
ED	Emergency Department
EGH	European Gaza Hospital
GDP	Gross Domestic Product
GS	Gaza Strip
GT	Gastric Tube
HFNC	High-Flow Nasal Cannula
HR	Heart Rate
ICU	Intensive Care Unit
IV	Intravenous
Km²	Square Kilometers
KT	Knowledge Translation
LOS	Length of Stay

LRI	Lower Respiratory Infection
LSD	Least Significant Difference
MOH	Ministry of Health
NG	Nasogastric
NGOs	Non-Governmental Organizations
NICU	Neonatal Intensive Care Unit
PCBS	Palestinian Central Bureau of Statistics
PCO₂	Partial Pressure of Carbon Dioxide
RCTs	Randomized Controlled Trials
RNA	Ribonucleic Acid
RR	Respiratory Rate
RSV	Respiratory Syncytial Virus
RV	Rhinovirus
SPO₂	Stands for Peripheral Capillary Oxygen Saturation
SPSS	Statistical Package for Social Sciences
UK	United Kingdom
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNRWA	United Nations Relief and Works Agency for Palestinian Refugees in the Near East
USA	United States of America
WB	West Bank
WBCs	White Blood Cells

Chapter One

Introduction

1.1 Background

Bronchiolitis is considered one of the earliest and most common causes of hospitalization among young children during their first 2 years of life (DeNicola, 2016). Bronchiolitis is the leading cause of hospitalization for infants with an estimated 3.4 million admissions globally every year (Nair et al., 2010). The causative agents include bacteria, fungi and viruses, this acute infection is mainly attributed to respiratory syncytial virus, accounting for 50–90% of the cases (Green et al., 2015).

Bronchiolitis is an acute lower respiratory tract infection usually presenting in early childhood with coughing, wheezing, and feeding problems (Nagakumar & Doull , 2012). Approximately 20% of children develop acute bronchiolitis in the first year of life and 2%-3% of them, most frequently infants between 30 and 60 days of age, will be hospitalized (Ralston et al., 2014). Bronchiolitis is generally seasonal, appearing most frequently in epidemics during the winter months. Respiratory syncytial virus (RSV) is the most common pathogen associated with lower respiratory tract disease worldwide (Mansbach et al., 2012).

Inflammation in the bronchioles is characterized by per bronchial infiltration of white blood cells, mostly mononuclear cells, as well as edema of the sub mucosa and adventitia. Edema, mucus secretion, and damage to the airway epithelium with necrosis may cause partial or total airflow obstruction, distal air trapping, atelectasis, and ventilation perfusion mismatch leading to hypoxemia (Pediatric Society New Zealand, 2016). Etiologic diagnosis is most often made by using rapid viral antigen test. This test has a high predictive value and meets the criteria of both price and speed (Ferronato et al., 2012).

A conservative approach to treatment seems appropriate in the majority of children, especially the youngest ones. The treatment is generally supportive, as no other treatment has been shown to improve important clinical outcomes, despite decades of research, effective pharmacotherapy for bronchiolitis is still lacking. The current treatment is controversial and there are no definitive recommendations for the use of any drug in the routine management of bronchiolitis (Ralston et al., 2014). Common pharmacological agents such as bronchodilator, corticosteroid, and hypertonic saline have been shown to only provide symptomatic relief (Florin et al., 2017). Maintaining hydration and oxygenation of patient remains the cornerstone of management (Ricci et al., 2015).

In an attempt to reduce the great variability in the clinical practice for bronchiolitis and produce better results for patients, recently, several different clinical practice guidelines (CPGs) such as the diagnosis of bronchiolitis and assessment of disease severity should be based on history and physical examination, risk factors for severe disease such as premature birth, underlying cardiopulmonary disease, continuous pulse oximetry is optional for infants and children with bronchiolitis for the management of the disease have been developed (Green et al., 2015).

In Gaza Strip nurses play an important role in the assessment and treatment of children with bronchiolitis. There are many of cases that suffer from this disease, and the nurse should have knowledge and practice to deal with the children who have bronchiolitis.

1.2 Problem statement

Bronchiolitis can be a life-threatening illness of infancy. In Gaza strip, approximately 11.2% children are admitted to the pediatric departments with bronchiolitis each year in Gaza hospitals of infants aged less than 12 year namely (EGH, Al Tahreer Hospital, Al Nasr Hospital and Al Aqsa Hospital, 2018) (personal communication, 2019), this give the

researcher an alarm to think deep to the complication and consequences of that disease on the life of children affected. The potential complications of bronchiolitis include cyanosis, dehydration, fatigue, severe respiratory failure, febrile seizures, respiratory distress with prolonged apneic spells, and death.

Bronchiolitis is considered stressful for parents in many respects regarding the physical, psychological, emotional, and social, the parent complaining of fear, anxiety and stress toward their children whom suffering bronchiolitis. In fact, it was noticed that there is deficit and gap about of nurses' knowledge and practice of among children with bronchiolitis in GS, in addition needs and lack of studies about nursing care of children with bronchiolitis in GS. For this reason, the current study takes place to assessment of nurses' knowledge and practice related to nursing care of children with bronchiolitis in GS. However, it is important to assess the level of knowledge and practice among nurses caring of children with bronchiolitis to identify the scope of the problem and suggest recommendations to improve nurses knowledge and practice.

1.3 Justification of the study

The researcher observed many of cases were admitted to the pediatric hospitals departments diagnosed as having bronchiolitis, however, as the researcher pediatric nurse in frequent contact with children complaining from bronchiolitis, nurses must have adequate knowledge and practice about caring of children with this disease, so, nurses have a unique role in providing this direct care and also educating the mother about the disease to avoid the complication.

Bronchiolitis in children is considered as a very important issue for nursing staff in the hospital. The performance may be limited by knowledge and practice. There is a lack of studies about the determinants of assessment of nurses' knowledge and practice related to

nursing care of children with bronchiolitis in the Gaza Strip, As the researcher have been working in the pediatric department and to the best of his knowledge, it is very important to study the determinants assessment of nurses' knowledge and practice related to nursing care of children with bronchiolitis in the Gaza Strip.

According to the researcher knowledge, there are no previous studies related to this field, the researcher has done his study in the Gaza Strip to focus on this problem.

1.4 Aim of the study

This study aimed to assess the nurses' knowledge and practice related to nursing care of children with bronchiolitis in GS.

1.5 Objectives

1. To identify the nurses' knowledge related to nursing care of children with bronchiolitis in GS.
2. To determine the nurses' practice related to nursing care of children with bronchiolitis in GS.
3. To determine the relationship between nurses' sociodemographic variables and knowledge regarding nursing care of children with bronchiolitis in GS.
4. To determine the relationship between nurses' sociodemographic variables and practice regarding nursing care of children with bronchiolitis in GS.
5. To suggest recommendations that may have an effect on improving the knowledge and practice related to nursing care of children with bronchiolitis in GS.

1.6 Research questions

1. What is the level of nurses' knowledge related to nursing care of children with bronchiolitis in GS?
2. What is the level of nurses' practice related to nursing care of children with bronchiolitis in GS?
3. Is there relationship between age, sex, years of experience, education level with knowledge related to bronchiolitis in children in GS?
4. Is there relationship between age, sex, years of experience, education level with practice related to bronchiolitis in children in GS?
5. What are the recommendations that have may an effect on improving the knowledge and practice related to nursing care of children with bronchiolitis in GS?

1.7 Context of the study

1.7.1 Sociodemographic context

Palestine lies within an area of 27,000 square kilometers (Km²), expanding from Ras al-Naqoura in the north to Rafah in the south (Annex 1). Palestinian territories is divided into three areas separated geographically; the West Bank (WB) 5.655 Km², Gaza Strip (GS) 365 Km² and East Jerusalem. In 2018, according to the Palestinian Central Bureau of Statistics (PCBS) census, the population of Palestine was 4,705,601, of whom 2.4 million were males compared to 2.3 million females, while West Bank had 2.8 million inhabitants, 60.1 % compared to 1.38 million females, while the population of Gaza Strip was 1.87 million, 39.9 % of the total population of Palestine. Within an area of 6,220 square kilometers (2,400 square miles), there is a population density of 731 people per square kilometer (PCBS, 2018).

1.7.2 Economic context

The Palestinian economy suffers from continuous pressure caused by long-term siege, imposed by Israeli occupation for more than 12 years. Economic status in the Palestinian territories is very low. A significant increase in poverty rates occurred in GS from 38.8% in 2011 to 53% by the end of 2017 (United Nations Office for the Coordination of Humanitarian Affairs - OCHA, 2018). Gross Domestic Product (GDP) is estimated about 440.2\$ (576.0 in WB and 248.7 in GS), unemployment rate accounted for 18.2% in WB and 41.7% in GS and for females unemployment rate is 44.7% (29.8% in WB and 65.2% in GG) (PCBS, 2018).

1.7.3 Health care system in Palestine

The Palestinian health system consists of different parties. The main parties that offer health services are the Ministry of Health (MOH), Non-Governmental Organization (NGOs), United Nations Relief and Works Agency for Palestinian Refugees in the Near East (UNRWA), the military medical services, and the private sector. The total number of hospitals in Palestine is 83 hospitals, 51 of them in WB including east Jerusalem and 32 in GS. The number of hospitals owned by MOH in Gaza strip is 13 hospitals, 16 for NGOs, 2 for the Ministry of Interior and National Security and 1 for the private sector. The number of hospital beds in the Gaza Strip reached 2,943 beds (2,240 beds belonging to the Ministry of Health, 526 beds belonging to non-governmental institutions, and 177 beds belonging to the Ministry of Interior and National Security). The number of physicians working in different centers and units of MOH is 3100 physicians, with 14.6 physicians per 10,000 population of Palestine in GS, and the number of nurses working in MOH in GS is 3682 nurses representing 25.1 % of total employees in MOH, with 21.2 nurses per 10,000 population of Palestine in GS .The number of visitors to emergency departments in 2017 was 1,402,222 visitors (MOH, 2018).

1.7.4 Children in Palestine

The Palestinian population is characterized by high percentage of young age as the percentage of children 0 - 14 years old is 38.9% (36.6% in WB and 42.6% in GS), and those aged between 15 – 29 years accounted for 29.7% (29.9% in WB and 29.5% in GS) (PCBS, 2018). The number of children under the age of 18 is 2,115,370 children in Palestine according to the results of population, housing and establishments Census 2017, of which 1,083,720 males and 1,031,650 females. The percentage of children is 45.3% of the population (43.4% in WB and 48.0% in GS). Data from the scholastic year 2017/2018 showed that the number of children enrolled in schools reached about 1.254 million, of which 1.107 million were children students in the basic stage (50.4% males versus 49.6% females), and the number of children enrolled in kindergartens reached about 146.8 thousand children (51.1% males and 48.9% females) (PCBS, 2018).

Regarding health-related data, 0.9% of the children have at least one form of disability (0.7% in WB and 1.2% in GS), 1.1% of male children compared to 0.8% for females. The main causes of disability among children included congenital or genetic causes; 45.5% (43.5% males and 48.3% females), followed by causes related to pregnancy and childbirth 23.3% (22.8% males and 24.1% females), then 21.1% for pathological causes (22.2% males and 19.6% females). Moreover, 25.3% of the children suffer from communication disability followed by mobility disability and use of hands 25.1%, then remembering and concentration 19.7% and the lowest percentage goes for hearing disability by 13.2% for the year 2017 (PCBS, 2018).

In addition, enrollment of children in basic education (6 – 15 years) in GS reached 94.3% for male children and 95.9% for female children. There are 443,425 children enrolled in basic education in GS (223,928 males and 219,497 females), and classroom density was 36.9 (37.1 in government schools and 39.0 in UNRWA schools), and rate of student per

teacher was 24.8 (21.9 in government schools and 30.4 in UNRWA schools). Child services provides curative and preventive health in all of the Ministry of Health and UNRWA clinics. The Ministry of Health care more attention to Palestinian children. This is evident through the provision of free treatment to him until the age of five years and provide him with chariots of iron and vitamin "A" and "D" in addition to the child's development that takes place in primary care centers (PCBS, 2018).

1.7.5 Martyr Mohammed Al-Durra Hospital

Martyr Mohammed Al-Durra Children's Hospital is a hospital that provides general pediatric services in Gaza City. The hospital has a clinical capacity of 100 beds. It is located in Salah El-Din Street. It was built in 2000 on an area of 1600 square meters, serving the areas of Al-Shuja'iya, Al-Shaaf and Al-Daraj neighborhood, Al-Zaytoon and Al-Tuffah neighborhood, the hospital consists of four departments: a pediatric emergency department and two internal department for children and intensive care. Martyr Mohammed Al-Durra Children's Hospital is the first center for pediatric cardiology in Palestine in addition to general pediatric services and intensive care (MOH, 2018).

1.7.6 Al-Nasr Hospital

Established in 1962, Al-Nasr Children's Hospital, with an area of 4400 m², is the oldest and largest children's hospital in the Gaza Strip. It is located in Al-Nasr neighborhood, and it serves a large area of Gaza City and some of its services extend to the central and northern area in the Gaza Strip, with a capacity of 132 beds and a total hospital staff of 294 employees, the hospital's mission is to provide health services to children from birth to 12 years of age (MOH, 2018).

1.7.7 Al-Aqsa Martyrs Hospital

Al-Aqsa Martyrs Hospital is the only governmental hospital in the central region, serving more than 300,000 people. General hospital provides medical and surgical services,

women, obstetrics and pediatrics. The population of middle governorate has a clinical capacity of 129 beds, of which 103 beds are reserved for hospitalization. The pediatric department consists of 50 beds. The staff is 562 employees of all categories (MOH, 2018).

1.7.8 Nasser Medical Complex

Medical Complex includes Naser hospital, which is dedicated to surgery, internal medicine, Al-Tahreer hospital for women, childbirth and children, and Al Yassin hospital, it located in Khan Younis. Khan Yunis governorate has a total clinical capacity of 322 beds, with a total of 769 employees. Al-Tahreer Hospital was opened in 1999 and covers an area of 1800 square meters. The hospital has a pediatric emergency department, and two internal department for children, It includes 64 beds for children, It also has a special care baby unit for newborns. It also has a maternity department with 90 beds for maternity cases, it also has two rooms for obstetrics and gynecology (MOH, 2018).

1.7.9 European Gaza Hospital

European Gaza Hospital is located in Khan Younis governorate. The total area of the hospital buildings is 20,000 square meters. Gaza European Hospital is a distinguished center providing medical services in the second and third level of the southern region. The hospital serves a population of 500,000 following international standards of medical care. The European Gaza Hospital is a model of administrative operations, particularly in the optimal use of information technology and the development of comprehensive medical records management and financial management systems. A large public hospital with a total clinical capacity of 256 beds, of which 203 beds are allocated for overnight use. The pediatric department consists of 32 beds. The population in the southern governorates of the Gaza Strip is particularly distinguished by providing heart catheter service to all governorates of the Gaza Strip. The total number of hospital staff is 781 employees (MOH, 2018).

1.8 Theoretical and operational definition

1.8.1 Children

According to the convention on the right of the child, a child means every human being below the age of 18 years, unless under the law applicable to the child, majority is attained earlier (UNICEF, 2014).

1.8.2 Bronchiolitis

Bronchiolitis is blockage of the small airways in the lungs due to a viral infection (Friedman, et al, 2014).

1.8.3 Knowledge

Knowledge defined by researcher as the awareness, understanding, or information that has been obtained by experience or study to perform care for children with bronchiolitis that will be measured using questionnaire.

1.8.4 Practice

Practice defined by researcher as the range of roles, responsibilities and activities which registered nurses are authorized to perform care for children with bronchiolitis that will be measured using questionnaire.

Chapter Two

Conceptual framework and literature review

2.1 Conceptual Framework

The conceptual framework was designed by the researcher based on the review of the available literature. The Conceptual framework is the map that guides the design and the implementation of the study and its effect mechanism for illustration and summarizing the whole study variables.

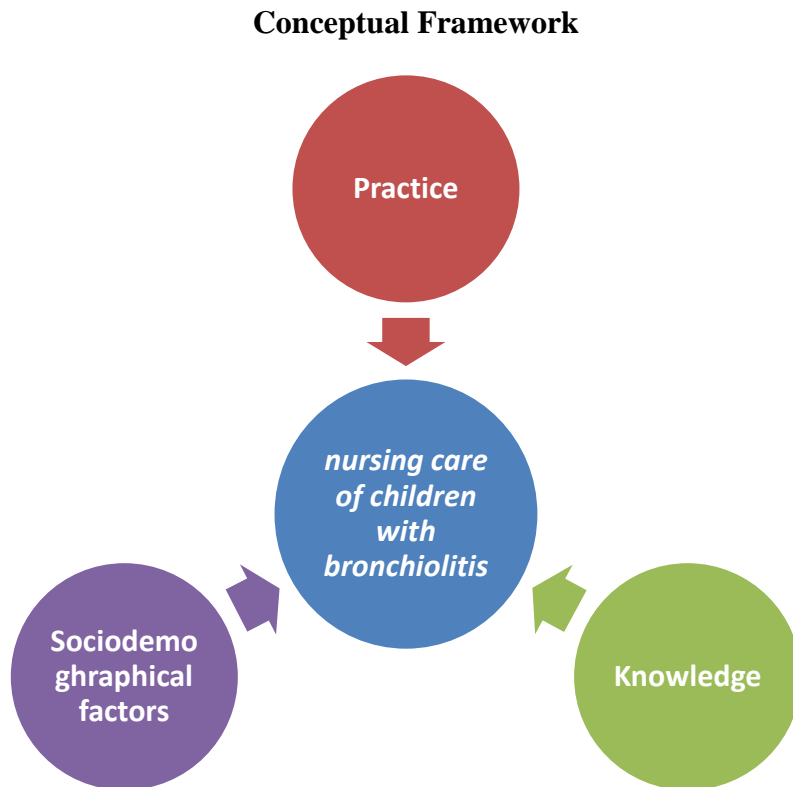


Figure (2.1): Diagram of conceptual framework diagram (self-developed)

2.2 Literature review

2.2.1 Background

Bronchiolitis is the leading cause of morbidity and hospitalization in infants under the age of one year. Supportive treatments and regular assessment remain the main stay of care for infants admitted to hospital, nurses play an important role in the assessment of infants with bronchiolitis; however, this is not well described in the literature and consequently little is known about what strategies nurses employ in assessing infants with bronchiolitis (Davies et al., 2017).

Bronchiolitis is an acute lower respiratory tract infection in early childhood caused by different viruses, with coughing, wheeze and poor nutrition as the major symptoms. Bronchiolitis is the most common reason for hospitalization of children in many countries, challenging both economy, area and staffing in pediatric departments. Respiratory syncytial virus (RSV) is the most common virus causing bronchiolitis, occurring in epidemics during winter months (Nagakumar & Doull, 2012).

Bronchiolitis is a seasonal viral illness characterized by fever, nasal discharge and a dry, wheezy cough. Fine inspiratory crackles and/or a high-pitched expiratory wheeze may be heard on examination, The condition is the most common reason for hospitalization in infants under the age of two and the most frequent cause of acute respiratory distress failure in pediatric intensive care units in the UK (Kelsall-Knight, 2012).

A substantial proportion of children will experience at least one episode with bronchiolitis, and as much as 23% of all children will be hospitalized with bronchiolitis during their first year of life (Stockman et al., 2012). Some infants, particularly those with risk factors, will have a severe course of bronchiolitis. Bronchiolitis is the most common medical reason for

admission of children to intensive care units (ICU), providing challenges regarding ventilation, fluid balance and general support (Choi & Lee, 2012).

Clinical definition

Bronchiolitis is blockage of the small airways in the lungs due to a viral infection (Friedman et al., 2014). It usually only occurs in children less than two years of age (Schroeder & Mansbach, 2014). Symptoms may include fever, cough, runny nose, wheezing, and breathing problems. More severe cases may be associated with nasal flaring, grunting, or the skin between the ribs pulling in with breathing. If the child has not been able to feed properly, signs of dehydration may be present, about 10% to 30% of children under the age of two years are affected by bronchiolitis at some point in time, It more commonly occurs in the winter (Friedman et al., 2014).

Bronchiolitis is usually the result of infection by respiratory syncytial virus (72% of cases) or human rhinovirus (26% of cases) (Schroeder & Mansbach, 2014). Diagnosis is generally based on symptoms (Friedman et al., 2014). Tests such as a chest X-ray or viral testing are not routinely needed, urine testing may be considered in those with a fever (Schroeder & Mansbach, 2014). In Europe, wheezing is regarded as a less important finding (Wainwright, 2010). Children hospitalized for wheezing between 12 and 24 months of age may have a higher risk for having asthma, and with different pathophysiology and prognosis (Mikalsen et al., 2013).

Epidemiology

Approximately 20% of children develop bronchiolitis during their first year of life, and studies from the USA have found increasing rates of bronchiolitis (188/1000 infants in 1996/97 to 265/1000 in 2002/03) in this age group (Wainwright, 2010). In a Norwegian study, the mean annual hospitalization incidence for RSV bronchiolitis was 21.7 per 1000

for children below 12 months and in a large study from England the admission rate for all infants with bronchiolitis below 12 months of age was 24.2 per 1000 (Murray et al., 2014).

Bronchiolitis is generally seasonal, appearing most frequently in epidemics during the winter months. For RSV, the same seasonal pattern is observed throughout the world, with most cases occurring from October until May on the northern hemisphere (Birkhaug et al., 2013).

Bronchiolitis is a worldwide problem and it is estimated that approximately 1 percent of children in the Western world will require hospitalization because of it. Epidemics of bronchiolitis occur each winter in the UK and North America between the months of November and February; however, sporadic cases can also occur at other times of the year (Kelsall-Knight, 2012).

Mortality is very low in developed countries, but reported high in the developing world possibly due to overcrowding, poor nutrition, high inoculation, and low medical care, mortality is high in the high-risk groups reaching 47% in chronic liver disease (CLD) and 49.7% in congenital heart disease (CHD) infants (Feldes et al., 2013). RSV is the predominant organism responsible for around 70% of bronchiolitis cases worldwide, the prevalence in the kingdom of Saudi Arabia has wide variation 25%–88% (Leung et al., 2015).

In Jordan they sought to determine the burden and clinical/epidemiological characteristics of RSV hospitalization in young children in Amman. The researcher investigated risk factors for severity including vitamin D levels. The researcher conducted viral surveillance with clinical and demographic data in children <2 years admitted with respiratory symptoms at the Al-Bashir Government Hospital from March 16, 2010 to March 31, 2013. Nasal/throat swabs were obtained for testing for 11 respiratory viruses. Of the 3168

children, >80% testing positive for one virus, with RSV the most common virus detected (44%). The RSV-associated hospitalization rate was highest in children <6 months with an annual range of 21.1-25.9 per 1000, compared to 6.0-8.0 in 6-11-month-olds and 1.6-2.5 in 12-23-month-olds. RSV-positive children compared with RSV-negative were more likely to be previously healthy without underlying medical conditions, less likely to be born prematurely, had a higher frequency of supplemental oxygen use, and had lower median vitamin D levels. Risk factors for oxygen use in RSV-positive children included underlying medical conditions, lack of breastfeeding, younger age, and higher viral load. RSV is a major cause of illness in hospitalized Jordanian children and is associated with increased severity compared to other respiratory viruses. Children with RSV in the Middle East would benefit from future RSV vaccines and antiviral therapy (Natasha et al., 2015).

Each year in the United States, an estimated 75,000– 125,000 hospitalizations related to RSV occur among children aged <1 year, In the United States, RSV season begins in the fall, peaks in winter, and ends in the late winter and early spring (Centers for Disease and Prevention, 2011), In USA, Groothuis et al. reported that a steady decrease in the yearly incidence of RSV associated hospitalizations in children younger than two years with Chronic Lung Disease of Infancy (CLDI) over the period of 1998-2008. Possible explanation of this trend included improvement of neonatal intensive care and outpatient management of CLDI, increased public awareness with improved protection of these infants from RSV, and increased use of palivizumab for prophylaxis in preterm infants with CLDI (Groothuis et al., 2011).

A retrospective cross-sectional study, conducted at Al-Nassr Pediatric Hospital over a 5-month period (from 1st November 2016 to 31st March 2017). 537 cases were retrospectively evaluated (222 females, 315 males). Acute bronchiolitis had the highest incidence among young age group (mean age 3.7 months) with male predominance (58.7%

males versus 41.3% females). The peak incidence occurred in January (50.5% of total cases). Most cases were from Gaza city (45.6%). Cough and difficult breathing were the commonest presenting symptoms. Younger age was the most relevant risk factor (49.4% of cases less than 3 months). Other identified risk factors were: previous NICU admission, premature, chronic heart diseases, chronic lung diseases, neurological diseases, others (3.7%, 1.5%, 1.3%, 1.2%, 0.4%, 2% respectively). Regarding management plan, although supportive care was the mainstay, there was a noticeable variation in inhalation therapy. All cases were discharged in a good condition and most of them (76%) needed 2-5 days of hospitalization. Acute bronchiolitis had the highest incidence among young age group with male predominance and peak incidence in January 2017. The commonest risk factor was infants less than 3 months. The main line of management is supportive care (Jehad, 2018).

Pathophysiology

RSV is the most common virus involved in children with bronchiolitis. In most studies it accounts for 60–80% of the bronchiolitis cases in children below 12 months of age (Nagakumar & Doull, 2012). The infection starts in the upper respiratory tract, spreading to the lower airways within few days. The inflammation in the bronchioles is characterized by a peri bronchial infiltration of white blood cell types, mostly mononuclear cells, and edema of the submucosa and adventitia, damage may occur by a direct viral injury to the respiratory airway epithelium, or indirectly by activating immune responses (Wainwright, 2010). Edema, mucus secretion, and damage of airway epithelium with necrosis may cause partial or total airflow obstruction, distal air trapping, atelectasis and a ventilation perfusion mismatch leading to hypoxemia and increased work of breathing, smooth-muscle constriction seems to play a minor role in the pathologic process of bronchiolitis (Zorc & Hall, 2010).

Clinical characteristics

Bronchiolitis often starts with rhinorrhea and fever, thereafter gradually increasing with signs of a lower respiratory tract infection including tachypnoea, wheezing and cough. Very young children, particularly those with a history of prematurity, may appear with apnea as their major symptom (Wainwright, 2010). Feeding problems are common. On clinical examination, the major finding in the youngest children may be fine inspiratory crackles on auscultation, whereas high-pitched expiratory wheeze may be prominent in older children (Zorc & Hall, 2010).

By observation, the infants may have increased respiratory rate, chest movements, prolonged expiration, recessions, use of accessory muscles, cyanosis and decreased general condition retrieved from (Pediatric Society New Zealand, 2016). Risk factors for bronchiolitis are male gender, a history of prematurity, young age, being born in relation to the RSV season, pre-existing disease such as bronchopulmonary dysplasia, underlying chronic lung disease, neuromuscular disease, congenital heart disease, exposure to environmental tobacco smoke, young maternal age, short duration/no breastfeeding, maternal asthma and poor socioeconomic factors. However, the majority of children hospitalized for bronchiolitis have no underlying condition (Murray et al., 2014). Apnea may occur particularly in low-birth weight and preterm babies (Datsopoulos, 2014).

Assessment

Clinical assessment

The diagnosis of bronchiolitis is made clinically, as described. Risk factors for a severe course should be recognized, including young age which is associated with increased risk of apnea, prolonged hospitalization, hypoxemia, admission to ICU and the need of mechanical ventilation. Pulse oximetry should be included in the clinical assessment of

bronchiolitis when possible, as it can detect hypoxemia not suspected by the clinical examination (Zorc & Hall, 2010).

Laboratory assessment

Except for pulse oximetry, no routine diagnostic tests have been shown to have a substantial impact on the clinical course of bronchiolitis, and recent guidelines and evidence-based reviews recommend that no diagnostic tests are used routinely (Choi & Lee, 2012). Implementation of guidelines for the assessment and treatment of infants with bronchiolitis has reduced the use of diagnostic as well as therapeutic options, with a further reduction in costs and length of stay (Parikh et al., 2014).

The clinical course and management of bronchiolitis are similar and not influenced by identification of the viral agent (Zorc & Hall, 2010). However, identifying a viral etiology is shown to reduce the use of antibiotics, the number of investigations and the length of stay (Wainwright, 2010). Dependent on the setting, a viral diagnosis may be warranted for cohorting of patients and may reduce nosocomial infections, which may have impact on the long-term prognosis of the child (Zorc & Hall, 2010).

Examination by chest X-ray may increase the rate of antibiotic prescription without improving any outcome, and may in less than 1% reveal lobar consolidations suggesting the need of antibiotics. An X-ray may, however, be more likely to add positively in children with high and prolonged fever, oxygen saturation < 90%, chronic cardiopulmonary disease and in children in need of admission to an ICU or mechanical ventilation (Choi & Lee, 2012). Blood tests are commonly taken in children with bronchiolitis, but are not of clinical value in most patients and not recommended routinely (Zorc & Hall, 2010). Tests to be included may be total blood count and C-reactive protein if a secondary bacterial infection is suspected, and electrolytes in infants with feeding problems and signs of

dehydration. Blood gases is warranted and useful in infants with severe respiratory distress and potential respiratory failure (Wainwright, 2010).

Diagnosis

The most common tests used in hospitalized cases with bronchiolitis, although most that are unnecessary, are: rapid viral antigen testing of nasopharyngeal secretions for RSV. Although this test has little significance on outcome it may influence treatment as physicians tend to stop antibiotics if it is positive. However AAP guidelines reported that it is unnecessary as multiple viruses may cause bronchiolitis, arterial blood gases: ABG analysis, WBCs and differential, (CRP level), ECG or Echocardiography is reserved to cases with arrhythmia or cardiomegaly, pulse oximetry is a good indicator of severity and if it is persistently $<92\%$ indicates possible need for hospitalization, electrolytes if the child needs IV fluids, blood culture if temp $> 38.5\text{ }^{\circ}\text{C}$, other investigations are done only when needed as: urine analysis and culture, CSF analysis and culture or urine specific gravity, chest radiography: It is not routinely necessary. Findings from chest radiography are variable. Hyperinflation is usually present and 20-30% show lobar infiltration, atelectasis or both. Other findings are bronchial wall thickening, flattened diaphragm, peri-bronchial cuffing, tiny nodules and linear opacities (Barclay & Datsopoulos, 2014).

Differential diagnostic considerations

In most cases, the diagnosis of bronchiolitis is clinically evident and no further tests are indicated to rule out other diagnosis. However, other diagnosis may be considered in a child with atypical presentations including severe respiratory distress, and recurrent symptoms, and in a child presenting with otherwise typical symptoms, but with no signs of a viral infection (Zorc & Hall, 2010). Differential diagnosis may include gastroesophageal reflux, pertussis, foreign body aspiration, vascular ring and other mediastinal obstructions

or other congenital lung diseases, asthma may be considered in the oldest infants with recurrent episodes of wheeze, but the overlap with asthma is less likely when bronchiolitis is only defined in infants younger than 12 months of age (Wainwright, 2010).

Bronchiolitis usually presents as a one- or two-day history of upper respiratory tract infection. When the lower respiratory tract becomes involved, the hypersecretion of mucus causes the moist cough, commencement of respiratory distress and resultant feeding difficulties. The ability to feed in an infant is an important marker of the severity of bronchiolitis; therefore a well-documented history of any change in feeding is vital. Tachypnoea and tachycardia are usually in proportion to the severity of the illness and infants who are estimated to be feeding less than half of their normal amount usually have oxygen saturations of less than 94 percent in room air. Cyanosis will only be seen in severe bronchiolitis. The diagnosis of bronchiolitis is a clinical decision based on history and examination. The viral pathogen of causing the illness can be diagnosed by obtaining a nasopharyngeal aspirate from the child. Definitive diagnosis is important as differential diagnosis includes cardiac failure, asthma, pneumonia and neonatal sepsis (Kelsall-Knight, 2012).

Risk factor for disease

Lower birth weight, younger gestational age. Underlying cardiopulmonary disease, immunodeficiency (Budhiraja et al., 2012), cystic fibrosis (Da et al., 2013). The main risk factor for hospitalization is chronologic age, with 58-64% occurring in first 5 months after birth (Barclay, 2014). Other risk factors are positive RSV result, maternal age between 15-19 years, and maternal history of asthma and/or smoking (Budhiraja et al., 2012).

Management

General management

Management of acute bronchiolitis is generally supportive, as no medical treatment has shown to improve important clinical outcomes, such as length of hospital stay, use of supportive care or transfer to an intensive care unit. A conservative, “minimal handling” approach seems beneficial, especially for the youngest age group (<3 months) (Skjerven et al., 2013). Careful nasal suctioning may be beneficial in infants with copious secretion (Nagakumar & Doull, 2012).

The treatment most commonly given to a child with bronchiolitis is supportive care largely led by nurses. Supportive care aims to minimize the use of aggressive treatment and involves providing information to families and supporting the child throughout his or her illness, giving extra care, such as oxygen or nasal suction, to clear secretions only when necessary. This will minimize the stress that the child has to endure and may help to improve their condition. The family needs to have information about bronchiolitis and to be assisted in caring for their child as they would at home; they may be extremely anxious, however, and therefore it is imperative that the nurse listens to their anxieties and alleviates them as best as he or she can. The decision to admit a child to hospital is based mainly on the child’s need for oxygen, fluids or cardiorespiratory monitoring for apnea, and the treatment options depend predominantly on the severity of the illness (Kelsall-Knight, 2012).

Oxygen

Oxygen should be administered in hypoxic infants with bronchiolitis, and administered via nasal cannula or a face mask. However, there is no consensus on what level of oxygen saturation (SpO₂) oxygen support should be aiming at, and no randomized controlled trials have compared alternative oxygen supplementation regimes. In the UK, oxygen is commonly given to achieve a SpO₂ of 92-95%, while the AAP recommends a limit of SpO₂ of 90% in otherwise healthy children (Nagakumar & Doull, 2012).

Supplemental humidified oxygen via nasal prongs, facemask or head box is the only intervention known to improve outcome as it decreases ventilation/perfusion mismatch caused by air trapping (Budhiraja et al., 2012).

Fluid and nutrition

Maintaining hydration is an important part of the care of infants with bronchiolitis. The respiratory distress due to increased work of breathing may cause inadequate feeding and eventually lead to poor hydration (Nagakumar & Doull, 2012). Further, tachypnoea and fever increases fluid loss, potentially worsening the dehydration. Oral feeding may be sustained in milder cases, if needed by small volume frequent feed, and breastfeeding should be encouraged. However, a substantial part of infants hospitalized for bronchiolitis will be in need of fluid supplementation, either as intravenous (IV) fluid or with enteral feeding by gastric tube (GT). The advantage of IV fluids could be a decreased risk of aspiration and no interference with breathing, but with the disadvantage of possibly creating a catabolic state due to low calorie intake, and bearing a higher risk of fluid overload and electrolyte imbalance (Kugelman, et al, 2013). Through GT feeding, infants may achieve a better nutritional status and nitrogen balance, which may be beneficial for recovery, and may be a route for giving expressed breast milk (Oakley et al., 2010).

Feeding by GT may be given as boluses, or continuously in case of major respiratory distress (Nagakumar & Doull, 2012).

Mild cases should be fed more frequently in smaller amounts to be better tolerated and breast feeding shouldn't be suspended (Da et al., 2013). Moderate cases who cannot tolerate oral feeding and RR>50/minute should receive NG feeding (Belderbos et al., 2011). Intravenous fluids are needed in breathless infants and those with risk of pulmonary aspiration. Overall fluid intake should be restricted to two thirds of standard maintenance fluid requirement, with blood electrolytes monitoring because of the possibility of inappropriate ADH secretion (Datsopoulos, 2014).

Chest Physiotherapy (CPT)

CPT does not improve disease severity, respiratory parameters, LOS, or oxygen requirements (Budhiraja et al., 2012). Therefore, it is not recommended and is even discouraged as it may increase distress and irritability or cause rib fracture (Rochat et al., 2012).

Inhalations with bronchodilators

In addition to bronchodilation, inhalation with adrenaline may reduce mucosal swelling, which has led to frequent use in infants with bronchiolitis. However, a clinically important, significant effect has been documented for neither adrenaline nor beta-2-agonists. Studies on short-term effects show conflicting results. A recent Cochrane review concludes that inhaled (racemic) adrenaline does not improve clinical outcomes such as length of hospital stay or the use of supportive care in moderate to severe bronchiolitis inpatients (Hartling et al., 2011).

Adrenaline is therefore not recommended as a standard treatment in infants with bronchiolitis, but a trial might be performed in children >3 months, with critical evaluation of effect with respect to continuation of administration (Skjerven et al., 2013). Beta-2-agonists are not recommended for infants with bronchiolitis (Hartling et al., 2011).

Beta-agonist properties reverse bronchoconstriction, while alpha-agonist properties cause vasoconstriction and reduce edema. Evidence support that it is superior to placebo for short-term outcomes hospitalization within 24 hours but has no effects on: inpatient clinical course, vital signs, LOS and readmissions, It is not currently recommended as it is not superior to saline, therefore, should not be given (Datsopoulos, 2014).

Steroids

A recent metanalysis including 17 RCTs concluded that there is no beneficial effect of systemic corticosteroids in children with bronchiolitis, neither on rate of hospitalization for outpatients nor on length of stay for inpatients (Fernandes et al., 2013). Further, the combined therapy with inhaled epinephrine and high-dose oral dexamethasone (1 mg/kg at presentation and 0.6 mg/kg for an additional 5 days) appeared to reduce the rate of hospital admission in a small study. However, this treatment cannot be recommended until evaluation in larger studies has been done (Plint et al., 2010).

Although it has anti-inflammatory effect, there is no evidence to support its routine use as studies showed no difference compared to placebo as regards: Admissions at day 1 and 7, LOS, and clinical score, therefore they are not effective and should not be used (Fernandes et al., 2013).

Additional medication

Antibiotics is commonly used in children with lower respiratory tract infections, but a Cochrane review including 543 infants concludes that there is no evidence for the use of antibiotics in general. However, there is no role for antiviral therapy in bronchiolitis (Spurling et al., 2011).

Antibiotics

Concerns for bacterial infection: fever, young age, secondary infections, and severe cases. But evidence showed low rates of serious bacterial infection (1-12%) (Datsopoulos, 2014). The use antibiotics should be restricted to those with specific indications for bacterial infection given that overuse increases overall antibiotic resistance (Da et al., 2013).

Ribavirin

It is a broad-spectrum antiviral that inhibits RNA and DNA virus replication. Although it may reduce duration of mechanical ventilation and LOS; with possible decrease in subsequent wheezing episodes but the evidence showed that it has a controversial efficacy, it is expensive, cumbersome, has possible teratogenic and other health effects on caregivers. Therefore, it is not routinely recommended except in severe disease, or those at high risk for severe disease as immune-compromised, congenital heart disease, CF and other chronic lung diseases (Barclay, 2014).

Non-invasive and invasive ventilation

Continuous positive airway pressure (CPAP) with a nasal tube or a nasal mask has been widely used in children with moderate or severe bronchiolitis. However, many studies have found that the use of CPAP in bronchiolitis is safe, and on average reduces the capillary PCO₂ from before to shortly after CPAP (Donlan et al., 2011).

The pressure used during ventilation with CPAP is commonly set to 4–8 cm H₂O. Recently, a prospective study suggested that a nasal CPAP level of 7 cm H₂O was most efficient in reducing respiratory distress and improving the breathing pattern (Essouri et al., 2011).

Continuous Positive Airway Pressure (CPAP)

There is no conclusive evidence to recommend CPAP but it may be useful in severely distressed patients to avoid intubation, increasing O₂ requirements, apnea or rising PCO₂ (Budhiraja et al., 2012).

Prevention and infection control

Preventive measures aimed at reducing the transmission of RSV bronchiolitis that nurses could actively encourage include frequent handwashing, avoiding contact with people who have symptoms of upper respiratory tract infections and preventing ill infants from attending nursery until their symptoms have resolved (Kelsall-Knight, 2012).

Prevention of bronchiolitis relies strongly on measures to reduce the spread of the viruses that cause respiratory infections (that is, handwashing, and avoiding exposure to those symptomatic with respiratory infections). In addition to good hygiene, an improved immune system is a great tool for prevention. One way to improve the immune system is to feed the infant with breast milk, especially during the first month of life (Belderbos et al., 2012).

Outcome

Children hospitalized with bronchiolitis in infancy have an increased risk of subsequent asthma, reduced lung function and increased bronchial hyperresponsiveness (Mikalsen et al., 2012).

Prognosis

The majority of children with bronchiolitis will recover within seven to ten days, however, the cough may remain present for some weeks after subsidence of the respiratory distress. A small number of children may continue to wheeze and cough for several months and an indeterminate number will develop persistent wheeze and/or asthma but the relationship between these events is unknown (Kelsall-Knight, 2012).

Previous study about of nurses care regarding bronchiolitis

A study conducted Australia nurses play an important role in the assessment of infants with bronchiolitis; however, this is not well described in the literature and consequently little is known about what strategies nurses employ in assessing infants with bronchiolitis. The aim of the study was to explore bronchiolitis assessment in the context of nursing practice. A naturalistic inquiry study was undertaken using think aloud and retrospective probing data collection methods. The results revealed that the information gathered by nurses in their assessment of infants with bronchiolitis was varied and the process of acquiring and evaluating this information was multifaceted and holistic in nature. A close partnership between the nurse and mother was identified, and the mother's expert knowledge and ability to identify subtle changes in the infant's clinical condition over time was essential to the assessment process. The assessment partnership with families provides nurses with the most comprehensive and holistic view of the infant's clinical condition and vital assessment information could be lost if this partnership does not occur (Davies et al., 2017).

Previous study about knowledge of nurses regarding bronchiolitis

A study conducted Lebanon infants admitted to health-care centers with acute bronchiolitis are frequently monitored with a pulse oximeter, a noninvasive method commonly used for

measuring oxygen saturation. The decision to hospitalize children with bronchiolitis has been largely influenced by pulse oximetry. Many nurses lack the appropriate clinical fundamentals and limitations of pulse oximetry. This deficiency in knowledge might have been linked to changes in the management of bronchiolitis (Hendaus et al., 2015).

A study conducted in Canada previous confusion around the clinical management of infants with bronchiolitis has improved with the creation and integration of clinical nursing practice guidelines. Typical bronchiolitis in infants is a self-limited disease, usually due to an acute viral infection whose clinical course is not generally altered by aggressive evaluations/interventions, use of antibiotics, or other therapies. Most infants who contract bronchiolitis recover without consequences; however, rates of admissions have increased from 1% to 3% of all infants. Several studies on the use of clinical guidelines for the management of infant bronchiolitis have shown a reduction in unnecessary resource utilization with a streamlining of medical care for these infants (Sick Kids, 2012).

A study conducted in Qatar regarding development of molecular technologies allowed a better understanding of bronchiolitis etiology. Results from cohort studies evaluating the association between single, multiple viral infections and clinical outcomes are conflicting. Data on viral bronchiolitis in children were found to be limited in Qatar. The study aimed to determine frequency and seasonal trends of viral pathogens causing acute bronchiolitis, and to explore association between viral pathogens, disease severity and length of stay (LOS), at least one virus was detected in (85.4%) of included children with single and multiple viruses in 67 and (33%) of cases respectively. Where nurses found that respiratory syncytial virus (RSV) was the most detected virus, followed by rhinovirus (RV) in 25.5% of cases. Fall and summer admissions were associated with longer LOS (Janahi et al., 2017).

A study conducted Australasian bronchiolitis is the most common reason for admission to hospital for infants less than one year of age. Although management is well defined, there is substantial variation in practice, with infants receiving ineffective therapies or management. The study was tested the effectiveness of tailored, theory informed nurse's knowledge translation (KT) interventions to decrease the use of five clinical therapies or management processes known to be of no benefit, compared to usual dissemination nursing practices in infants with bronchiolitis. The primary objective is to establish whether the KT interventions are effective in increasing compliance to five evidence-based recommendations in the first 24 h following presentation to hospital. The five recommendations are that infants do not receive; salbutamol, antibiotics, glucocorticoids, adrenaline, or a chest x-ray (Haskell et al., 2018).

A study conducted Croatia related to respiratory syncytial virus testing was ordered in all consequently admitted infants, rapid RSV antigen testing was done in infants and was positive in 134 (69.4%) infants. The majority of infants were treated by nurses with antibiotic therapy and inhalational bronchodilators, followed by inhaled corticosteroids and with racemic epinephrine, ceftriaxone was the most frequently administered antibiotic, followed by a combination of ceftriaxone and azithromycin and azithromycin alone. Results showed that the most frequent etiologic agent is respiratory syncytial virus (RSV) found in 60% to 80% of cases. Study results confirmed the greater incidence of bronchiolitis in boys and the mean duration of hospital stay was 7.6 ± 3.3 days. Therefore, additional effort should be invested to lower antibiotic administration (Milić et al., 2017).

A study to assess the role of nurse's knowledge and practice on self-care management among the pediatric patients with bronchiolitis in selected hospitals, Tumkur, A study conducted on management of bronchiolitis on pediatrics. Bronchiolitis may be caused by a combination of factors, such as no adherence to guidelines, lack of compliance, and poor

of education. The aim was to assess nurse's knowledge of bronchiolitis and different management strategies. In conclusion, the study revealed an important deficit in nurse's knowledge especially on patient education (Backer et al., 2007).

A study conducted Switzerland, their aim was to evaluate the risk factors associated with delayed desaturation in infants with $SpO_2 > 92\%$ on arrival at the emergency department (ED) as well as the emergency nursing observation period necessary before allowing safe home discharge. A secondary aim was to identify the risk factors for ED readmission, during emergency nursing monitoring. Female sex, age < 3 months old, ED readmission, more severe initial clinical presentation, based on the study's results, a five-step guide for pediatricians on discharging children with bronchiolitis from the ED. By using the threshold of an 11-hour ED observation period for pediatric patients 3 months old and a 25-hour period for patients < 3 months old can able to detect 95% of the patients with bronchiolitis who are at risk of delayed desaturation (Stollar et al., 2016).

A study conducted Sudan assessment of nurses' knowledge and practice regarding care of bronchiolitis in Elmak Nimer hospital, this descriptive, analytic, based, cross-sectional study was conducted to assess the nurses knowledge and practice regarding care of bronchiolitis patients in Elmek Nemir Hospital, Shendi, Sudan, 2016. The study included 60 nurses. A pre-tested and pre-coded questionnaire consisting of 11 questions, it involved 60 nurses, their experience in pediatric unit between 1 year to more than 7 years; their qualification was varying. The study was show that most of the nurses (51.3%) not know the definition of bronchiolitis and more than (55%) of nurses have knowledge about giving oxygen during the attack and (61.6%) of nurses knows the nutritional care of bronchiolitis patient; regarding performance of nursing skills of bronchiolitis most of nurses (63%) of nurses not know to perform spirometry procedure, instead of (78%) of nurses know how to give oxygen to bronchiolitis patient, the study recommend that administrator should

develop continues education activities for nurses should to increase knowledge and practice of the nurses to be skillful; establish of educational poster in nurses office consist most important interventional activities for bronchiolitis patient (Alzain, 2017).

Previous study about practice of nurses regarding bronchiolitis

A study conducted England Skjerven and colleagues reported that inhaled racemic adrenaline is not more effective than inhaled saline in infants with acute bronchiolitis. Nurses frequently use inhaled treatments to treat children with bronchiolitis, despite the lack of evidence from clinical trials and recommendations against their use. The American Academy of Pediatrics recommendations for bronchiolitis state, “A carefully monitored trial of α -adrenergic or β -adrenergic medication is an option. Nurses should continue inhaled bronchodilators only if there is a documented positive clinical response to the experiment using an objective assessment method.” The study by Skjerven et al. showed that on-demand inhalation of racemic adrenaline or saline, as compared with fixed schedule inhalation, shortens mean length of hospital stay and decreases the need for supplemental oxygen in infants with bronchiolitis (Branco, 2013).

A study conducted Australia A prospective pilot study was conducted of 61 infants aged <12 months with bronchiolitis and oxygen requirement presenting to the emergency department and nursing care for them. High-flow nasal cannula (HFNC) was commenced at 2 L/kg/min, and fraction of inspired oxygen was titrated to oxygen saturation > 94%. A standard-treatment group managed by nursing with standard low-flow sub nasal oxygen during the same time period was retrospectively identified. The results showed that admission demographics, heart rate (HR) and respiratory rate (RR) were similar in test and standard-treatment groups. Non-responders to HFNC requiring pediatric intensive care unit (PICU) admission showed no change in HR and RR, whereas responders showed decreases

in HR and RR. Patients receiving HFNC were four times less likely to need PICU admission than the standard treatment group. Finally HFNC treatment in the pediatric ward is safe. Non-responders requiring PICU admission can be identified within the first hour of HFNC treatment by monitoring HR and RR (Mayfield et al., 2014).

A study conducted in France on acute bronchiolitis treatment in children and infants is largely supportive, but chest physiotherapy is routinely performed in some countries. In France, national guidelines recommend a specific type of physiotherapy combining the increased exhalation technique and assisted cough. The aim was to evaluate nurses for the effectiveness of chest physiotherapy in previously healthy infants hospitalized for a first episode of acute bronchiolitis. It had no significant effect on time to recovery in this group of hospitalized infants with bronchiolitis. Additional studies are required to explore the effect of chest physiotherapy on ambulatory populations and for infants without a history of atrophy (Gajdos et al., 2010).

A study conducted in Australia on the effect of chest physiotherapy on the respiratory and hospital outcomes of infants with acute bronchiolitis aged from 0 to 24 months of age. The results showed that chest physiotherapy did not decrease severity or time to recovery (primary outcomes) and did not decrease duration of oxygen supplementation, length of stay or parents' impression of physiotherapy benefit (McKinnon & McNab, 2018).

A study conducted in Australia. The American Academy of Pediatrics recommends a permissive hypoxemic target for an oxygen saturation of 90% for children with bronchiolitis, which is consistent with the WHO recommendations for nursing targets in children with lower respiratory tract infections. No evidence exists to support this threshold. The study aimed to assess whether the 90% or higher target for management of oxygen supplementation was equivalent to normoxic (Having a normal oxygen

concentration; typically 20-21% in the atmosphere, or 2-3% in physiological contexts.) 94% or higher target for infants admitted to hospital with viral bronchiolitis (Cunningham et al., 2015).

A study conducted in England severe respiratory failure develops in some infants with bronchiolitis because of a complex pathophysiologic process involving increased airways resistance, alveolar atelectasis, muscle fatigue, and hypoxemia due to mismatch between ventilation and perfusion. CPAP devices may also help to overcome airway resistance and atelectasis, and HFNC may also generate significant distending pressure. Observational studies have suggested that CPAP and HFNC reduce the need for intensive care, but no evidence from RCTs has demonstrated this to be the case. Nurses have found that both nasal CPAP and high-flow nasal cannula (HFNC) oxygen may improve the work of breathing and oxygenation. Although the mechanisms behind these non-invasive modalities of respiratory support are not well understood, nurses found them may help infants by way of distending pressure and delivery of high concentrations of warmed and humidified oxygen. Observational studies of varying quality have suggested that CPAP and HFNC may confer direct physiologic benefits to infants with bronchiolitis and that their use has reduced the need for intubation. Continuous positive airway pressure is (CPAP) and High-Flow Nasal Cannula Oxygen(HFNC) are conceptually attractive modalities for infants with severe bronchiolitis and may improve physiologic and clinical outcomes associated with respiratory distress and failure. Both deliver high concentrations of warmed, humidified oxygen precisely and accurately (Sinha et al., 2015).

A study conducted in Spain the aim of the study to investigate the clinical benefits of uses of nurses humidification in low-flow oxygen therapy, specific objectives were to investigate via an assessment of the number of nasal lavages whether nurses use humidification in low-flow oxygen therapy can help to decrease the nasal mucus viscosity, determine

whether the use of humidification in low-flow oxygen therapy by nurses in the treatment can alleviate feeding difficulties by comparing the weight gain in infants, to ascertain whether it can relieve respiratory distress by assessing the heart and respiratory rates and contribute to improved clinical outcomes, measured by the length of stay and oxygen requirements. The study summarized that humidification in low-flow oxygen therapy is an effective nursing intervention to improve the clinical outcomes of infants with mild–moderate bronchiolitis. Relevance to clinical practice: Humidifying the nasal mucosa can help to reduce the need for professional procedures, oxygen requirements and hospitalization length (Sanchez et al., 2017).

A study conducted Norway the majority of the studies on the nursing use for HFNC beyond the newborn period are small observational studies, with a limited level of evidence of its use in infants and young children. The results from the available studies suggest that nursing intervention to use HFNC is a relatively safe, well-tolerated and feasible method for delivering oxygen to infants and young children in a general pediatric ward. Most of the clinical studies in children have been observational studies conducted in infants with bronchiolitis. A positive clinical effect on various respiratory parameters has been detected, and studies suggest that HFNC may reduce the work of breathing. HFNC may also decrease the need of CPAP and invasive ventilation in infants and children. RCTs performed in preterm infants and adults suggest that HFNC may be as effective as CPAP following extubation. Until more evidence is available, HFNC may be used by nursing as a supplementary form of respiratory support in infants and children, but with a critical approach regarding effective clinical responses and safety issues relating to early recognition of treatment failure, particularly when children are managed on HFNC outside of a pediatric intensive care unit (Mikalsen et al., 2016).

A study conducted in Ireland found bronchiolitis is a seasonal viral lower respiratory tract illness common in infancy and a major cause of hospitalization in this age group. The course is often self-limiting but drawn out over 2-4 weeks. Investigations are of limited value and the diagnosis is essentially clinical. Mainstay of nursing management is supportive care to maintain oxygenation and hydration. Historically, clinical trials have shown little or no significant benefit of pharmacological therapy in bronchiolitis. Commonly nursing used pharmacological agents include nebulized hypertonic saline, bronchodilators, epinephrine and corticosteroids, oral or inhaled. There also seems to be a promising role of oxygen in reducing the need for hospitalization. Home oxygen is increasingly being used in patients with uncomplicated bronchiolitis and on-going hypoxia as an effective way to decrease both hospital admissions and the length of hospital stay (Budhiraja et al., 2012).

Unfortunately, in Gaza strip (GS), there is few studies were done, this study was the first one regarding assessment of nurses' knowledge and practice related to nursing care of children with bronchiolitis in Gaza strip.

Chapter Three

Methodology

This chapter addresses issues related to methodology procedures used to answer the research questions. The chapter commences with study design, study setting, study population, period of the study, sample size, sampling method, and eligibility criteria of the selection of study participants. In addition, this chapter presents the construction of the questionnaire, ethical consideration and procedures of data collection and data analysis.

3.1 Study Design

The researcher used a descriptive, cross-sectional design.

3.2 Study setting

The study had been carried out in European Gaza Hospital, Al Tahreer Hospital, Al Aqsa Hospital, Al Nasr Hospital and Al Durra Hospital, that represent all the pediatric hospitals in GS.

3.3 Study population

The population of this study consisted of all nurses of different sexes with different degree and working in the pediatric department.

3.4 Period of the study

The study was conducted during the period from June 2019 to November 2019. Data collection was carried out during November 2019.

3.5 Sampling process and sample size

The study sample consisted of 124 nurses of both sexes with different grades and working in pediatric department at the five governmental hospitals in GS. The sample of this study was census sample, mean that the researcher has been matched with the eligibility criteria.

Nurses received explanation about the purpose of the study and have been asked to participate in the study voluntary. These nurses who agreed to participate in the study received the questionnaire and filled it according to instructions given by the researcher.

3.6 Eligibility criteria

3.6.1 Inclusion criteria

All nurses working in pediatric department.

3.6.2 Exclusion criteria

Volunteer and student nurses.

3.7 Study tools and instruments

The self-administered questionnaire was developed by the researcher to implement the study: the main items of the questionnaire contained the following parts:

Part I: Questions about sociodemographic data such as age, gender, education level, marital status, job description (Annex 2, 3).

Part II: Questions about knowledge (Annex 4, 5).

Part III: Questions about practice (Annex 6,7).

3.8 Ethical and administration consideration

The ethical, administrative considerations and procedures are very important conditions in applying the research. All of the ethical procedures have to be followed perfectly without ignoring any of them.

An official letter of approval was obtained from Al- Quds University to conduct the study (Annex 8). An official letter was obtained from MOH to conduct this study (Annex 9). An official letter of approval was obtained from Helsinki Committee in Gaza Strip (Annex

10). Every participant was provided with an explanatory form about the study including the purpose of the study, confidentiality of information and some instructions.

3.9 Validity and Reliability

3.9.1 Face and content Validity:

The questionnaire was evaluated by experts to assess all the components and the context of the instrument, in order to ensure that it is highly valid and relevant and their comments were taken in consideration, the questionnaire was formatted in order to ensure face and content validity, this including appealing layout, and logical sequences of questions and clarity of instructions.

3.9.2 Reliability of the study instruments

To test reliability, the researcher used Cronbache alpha method as presented in the table below.

Table (3.1): Reliability of knowledge and practice questionnaire (Cronbache alpha coefficient)

No.	Domain	No. of items	Alpha coefficient
1	Knowledge	21	0.818
2	Practice	17	0.804

The value of alpha coefficient for the knowledge domain and practice domain was above 0.70, which means that the questionnaire has good reliability

3.10 Pilot study

A pilot study has been conducted on 24 participants before the questionnaire distributed in order to test reliability of its items, and to identify the clarity or ambiguity of questionnaire items, this stage aimed to explore the appropriateness of the study instrument, the clarity of

different meaning and scales, also to determine the time needed to fill the questioner. Modification was done accordingly.

3.11 Data collection

Data have been collected by the researcher via self-administered questionnaire. A consent form was attached to each questionnaire (Annex 11). Time estimation for filling of the three parts is about 15 minutes, contain sociodemographic data (age, gender, ext....), knowledge domain (21 item),(yes=2, no=1) and practice domain (17 item)(true=2, false=1). The questionnaire was distributed to the nurses who are working in the pediatric department and collection of questionnaire for statistical analysis.

3.12 Data entry and analysis

The data were analyzed by using the SPSS program version 22. The stages of data analysis included: coding the questionnaire, data entry, and data cleaning. Data cleaning were performed by reviewing frequency tables. The frequencies and descriptive data (frequencies, percentage, cross-tabulation, One way ANOVA and T-test) used for the results. Were conducted to assess the research variables. The researcher used Cronbache alpha coefficient for reliability.

Chapter Four

Results

This chapter presents the results of statistical analysis. The results were divided mainly in two parts: Descriptive results and inferential results. Description of demographic characteristics of study participants was illustrated as well as the results of different variables were identified as inferential results. The results were presented in figures and tables.

4.1 Descriptive results

4.1.1 Sociodemographic characteristics of study participant

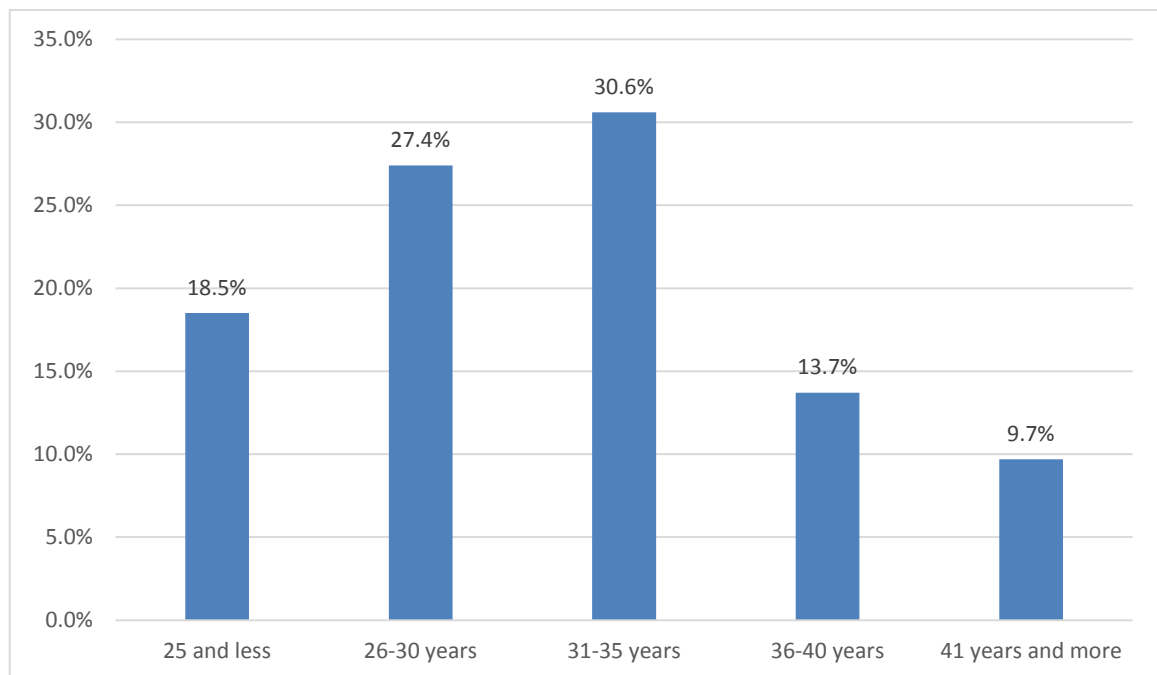


Figure (4.1): Distribution of study participants by age

Figure (4.1) showed that more than half of study participants were young age as 34 (27.4%) were in the age group of 26 - 30 years, and 38 (30.6%) were in the age groups 31 – 35 years. The mean age of the study sample was 32.10 ± 6.863 years.

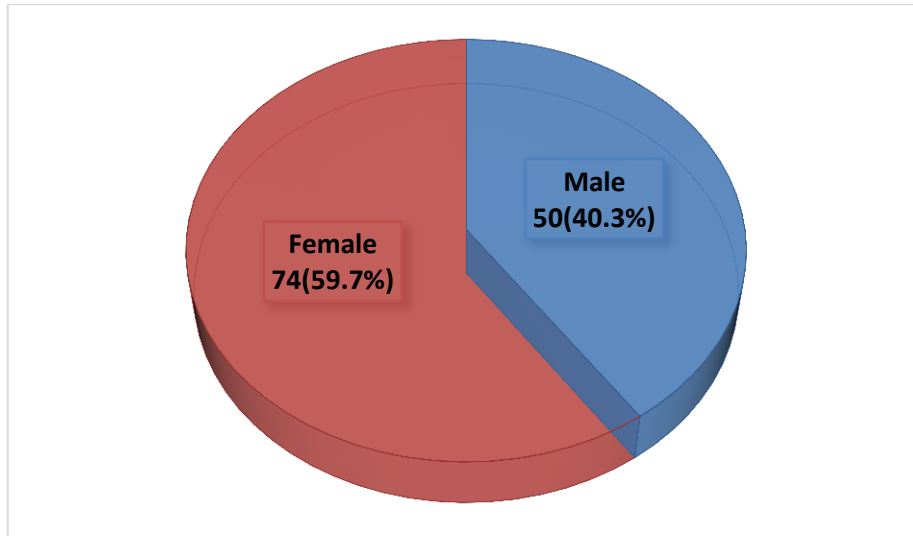


Figure (4.2): Distribution of study participants by gender

Figure (4.2) showed that 50 (40.3%) of study participants were male nurses, and 74 (59.7%) were female nurses.

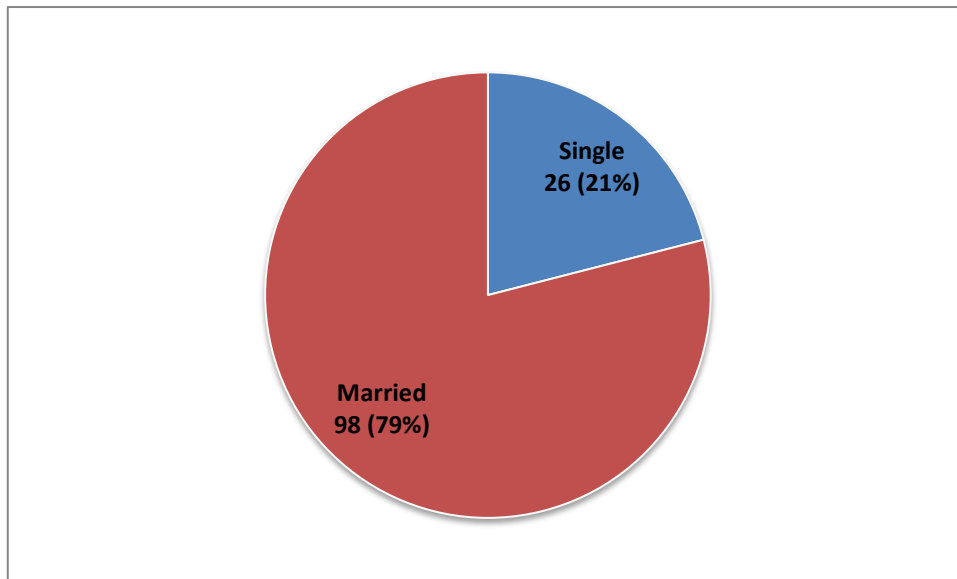


Figure (4.3): Distribution of study participants by marital status

Figure (4.3) showed that 98 (79%) of study participants were married, and 26 (21%) were single.

Table (4.1): Sociodemographic characteristics of study participant

Variable	Number (n-124)	Percentage (%)
Job title		
Nurse	119	96.0
Head nurse	5	4.0
Total	124	100.0
Qualification		
Diploma	28	22.6
Bachelor degree	93	75.0
Master degree	3	2.4
Total	124	100.0
Experience		
1 – 5 years	46	37.1
6 – 10 years	24	19.4
11 – 15 years	38	30.6
16 years and more	16	12.9
Total	124	100.0
Mean = 8.85 years SD = 5.878 years		
Hospital name		
Al Durra	31	25.0
Al Nasr	32	25.8
Al Aqsa	22	17.7
Al Tahreer	20	16.1
EGH	19	15.4
Total	124	100.0
Place of residency		
North	18	14.5
Gaza	40	32.3
Middle	29	23.4
Khanyounis	26	21.0
Rafah	11	8.8
Total	124	100.0
Received training about bronchiolitis		
Yes	20	16.1
No	104	83.9
Total	124	100.0

Table (4.1) showed that the majority of study participants 119 (95%) were regular nurses, and 93 (75%) have bachelor degree. The results also showed that 46 (37.1%) have an experience of 1 – 5 years and 38 (30.6%) have an experience of 11 – 15 years, with mean experience of 8.85 ± 5.878 years. In addition, 31 (25%) of study participants from Al Durra hospital, 32 (25.8%) from Al Nasr hospital, 22 (17.7%) from Al Aqsa hospital, 20 (16.1%) from Al Tahreer hospital, and 19 (15.4%) from EGH.

Regarding place of residency, 40 (32.3%) live in Gaza governorate, compared to 18 (14.5%), 29 (23.4%), 26 (21%), and 11 (8.9%) live in the north, in the middle, in Khanyounis, and in Rafah governorates respectively. The results also showed that the majority of study participants 104 (83.9%) did not receive training about bronchiolitis, while 20 (16.1%) received training about bronchiolitis.

4.2 Inferential results

4.2.1 Level of knowledge about bronchiolitis

To determine the level of nurses knowledge about care of patients with bronchiolitis, the researcher calculated frequencies and percentage of correct and wrong answers as illustrated in table (4.2).

Table (4.2): Knowledge of participants about care of children with bronchiolitis (n= 124)

No.	Item	Correct answer		Wrong Answer	
		n	%	N	%
1.	Bronchiolitis considered the commonest respiratory disease among children.	121	97.6	3	2.4
2.	Bronchiolitis is inflammation of bronchial tissue.	22	17.7	102	82.3
3.	Bronchiolitis is the main cause of hospitalization for children under 3 years.	108	87.1	16	12.9
4.	Bronchiolitis classified as lower respiratory tract infection.	91	73.4	33	26.6
5.	The common sound in bronchiolitis is wheezing.	113	91.1	11	8.9
6.	Bronchiolitis disease increase in the winter.	122	98.4	2	1.6
7.	Prematurity and low birth weight consider risk factor for bronchiolitis.	113	91.1	11	8.9
8.	The most sign and symptoms of bronchiolitis among children is cyanosis.	34	27.4	90	72.6
9.	Bronchiolitis may be diagnosed clinically.	100	80.6	24	19.4
10.	Increase respiratory rate is clinical feature in bronchiolitis.	109	87.9	15	12.1
11.	Bronchiolitis is self-limited.	26	21.0	98	79.0
12.	The causative agent of bronchiolitis is bacterial infection.	64	51.6	60	48.4
13.	Bronchiolitis consider genetic disorder.	109	87.9	15	12.1
14.	The passive smoking increase the risky rate of bronchiolitis.	115	92.7	9	7.3
15.	Bronchiolitis is an infectious disease.	53	42.7	71	57.3
16.	In severe bronchiolitis respiratory rate is less than 70 breath per minute for children under 3 years.	46	37.1	78	62.9
17.	Respiratory distress may cause inadequate feeding and poor hydration in bronchiolitis.	112	90.3	12	9.7
18.	Feeding is normal among children with mild bronchiolitis.	90	72.6	34	27.4
19.	Nasal flaring and grunting are present in moderate bronchiolitis.	32	25.8	92	74.2
20.	The general behavior in severe bronchiolitis is lethargy.	98	79.0	26	21.0
21.	The rate of oxygen saturation (Spo ₂) in severe bronchiolitis is more than 88%.	61	49.2	63	50.8
Average		66.78		33.22	

As presented in table (4.2), the overall average of knowledge among study participants about care of patients with bronchiolitis was 66.78%.

4.2.2 Level of practice about bronchiolitis

To determine the level of nurses practice of care of patients with bronchiolitis, the researcher calculated frequencies and percentage of correct and wrong answers as illustrated in table (4.3).

Table (4.3): Practice of participants about care for children with bronchiolitis (n= 124)

No.	Item	Correct answer		Wrong Answer	
		n	%	N	%
1.	I give oxygen at saturation above 90% to maintain respiratory system	95	76.6	29	23.4
2.	I stop feeding the child with bronchiolitis to prevent aspiration.	93	75.0	31	25.0
3.	I give fluids to children with bronchiolitis to ensure adequate hydration.	116	93.5	8	6.5
4.	I do chest physiotherapy to improve the bronchiolitis status.	11	8.9	113	91.1
5.	I give ventolin inhalation among children with bronchiolitis.	102	82.3	22	17.7
6.	I give an oral bronchodilator which is an effective treatment for children with bronchiolitis.	35	28.2	89	71.8
7.	I recommend the parents to keep personal hygiene of the child because it help the recovery from bronchiolitis.	111	89.5	13	10.5
8.	I give parenteral corticosteroid to infants with bronchiolitis.	25	20.2	99	79.8
9.	I use antibiotics routinely in the treatment of bronchiolitis.	58	46.8	66	53.2
10.	I use ventolin inhalation as a primary treatment with evaluation within one hour after use.	101	81.5	23	18.5
11.	I continue to give bronchodilator if there is no improvement for the child with Ventolin nebulizer	43	34.7	81	65.3
12.	I use continues positive airway pressure (CPAP) with nasal tube widely in children with mild bronchiolitis.	38	30.6	86	69.4
13.	I adjust the pressure on the ventilator (CPAP) usually from 4__8cm H2O.	61	49.2	63	50.8
14.	I give antiviral in the treatment of bronchiolitis.	71	57.3	53	42.7
15.	I give adrenaline inhalation to reduce the swelling of the mucous membrane of the lungs.	32	25.8	92	74.2
16.	I administer oxygen by nasal cannula or O2 mask in bronchiolitis.	115	95.7	9	7.3
17.	I raise the child head by 90 degrees to improve breathing in a child with bronchiolitis.	30	24.2	94	75.8
Overall average		53.93		46.07	

As presented in table (4.3), the overall average of practice of care for patients with bronchiolitis was 53.93%.

4.2.3 Relationship between knowledge, practice and selected variables

Table (4.4): Differences in knowledge and practice related to age (n= 124)

	Age (year)	N	Mean	SD	F	P value
Knowledge	25 and less	23	1.658	0.092	0.345	0.847
	26-30	34	1.659	0.096		
	31-35	38	1.669	0.089		
	36-40	17	1.686	0.090		
	41 and more	12	1.678	0.081		
	Total	124	1.667	0.090		
Practice	25 and less	23	1.496	0.088	1.962	0.105
	26-30	34	1.538	0.095		
	31-35	38	1.563	0.111		
	36-40	17	1.560	0.110		
	41 and more	12	1.519	0.065		
	Total	124	1.539	0.100		

One way ANOVA

Table (4.4) indicated that there were no statistically significant differences in levels of knowledge (F= 0.345, P= 0.847) and practice (F= 1.962, P= 0.105) about care of patients with bronchiolitis related to age of the nurse.

Table (4.5): Differences in knowledge and practice related to gender (n= 124)

Variable	Gender	n	Mean	SD	T value	P value
Knowledge	Male	50	1.649	0.098	-1.868	0.064
	Female	74	1.680	0.083		
Practice	Male	50	1.547	0.109	0.696	0.488
	Female	74	1.534	0.094		

Independent sample (t) test

Table (4.5) showed that there were no statistically significant differences in levels of knowledge ($t= -1.868$, $P= 0.064$) and practice ($t= 0.696$, $P= 0.488$) about care of patients with bronchiolitis related to gender of the nurse.

Table (4.6): Differences in knowledge and practice related to marital status (n= 124)

Variable	Marital status	N	Mean	SD	T value	P value
Knowledge	Single	26	1.663	0.093	-0.304	0.762
	Married	98	1.669	0.090		
Practice	Single	26	1.518	0.095	-1.212	0.228
	Married	98	1.545	0.101		

Independent sample (t) test

Table (4.6) showed that there were no statistically significant differences in levels of knowledge ($t= -0.304$, $P= 0.762$) and practice ($t= -1.212$, $P= 0.228$) about care of patients with bronchiolitis related to marital status of the nurse.

Table (4.7): Differences in knowledge and practice related to job title (n= 124)

Variable	Job title	n	Mean	SD	T value	P value
Knowledge	Nurse	119	1.668	0.090	0.508	0.613
	Head nurse	5	1.647	0.086		
Practice	Nurse	119	1.539	0.102	-0.041	0.968
	Head nurse	5	1.541	0.049		

Independent sample (t) test

Table (4.7) showed that there were no statistically significant differences in levels of knowledge ($t= 0.508$, $P= 0.613$) and practice ($t= -0.041$, $P= 0.968$) about care of patients with bronchiolitis related to job title of the nurse.

Table (4.8): Differences in knowledge and practice related to qualification (n= 124)

Qualification		n	Mean	SD	F	P value
Knowledge	Diploma	28	1.682	0.083	0.666	0.516
	Bachelor	93	1.662	0.093		
	Master	3	1.698	0.054		
	Total	124	1.667	0.090		
Practice	Diploma	28	1.542	0.102	1.185	0.309
	Bachelor	93	1.541	0.099		
	Master	3	1.451	0.135		
	Total	124	1.539	0.100		

One way ANOVA

Table (4.8) showed that there were no statistically significant differences in levels of knowledge (F= 0.666, P= 0.516) and practice (F= 1.185, P= 0.309) about care of patients with bronchiolitis related to qualification of the nurse.

Table (4.9): Differences in knowledge and practice related to experience (n= 124)

Experience (year)		N	Mean	SD	F	P value
Knowledge	1-5	46	1.657	0.097	2.048	0.111
	6-10	24	1.642	0.085		
	11-15	38	1.695	0.086		
	16 and more	16	1.669	0.076		
	Total	124	1.667	0.090		
Practice	1-5	46	1.519	0.093	2.083	0.106
	6-10	24	1.580	0.108		
	11-15	38	1.541	0.112		
	16 and more	16	1.529	0.060		
	Total	124	1.539	0.100		

One way ANOVA

Table (4.9) showed that there were no statistically significant differences in levels of knowledge (F= 2.048, P= 0.111) and practice (F= 2.083, P= 0.106) about care of patients with bronchiolitis related to experience of the nurse.

Table (4.10): Differences in knowledge and practice related to hospital (n= 124)

Hospital		N	Mean	SD	F	P value
Knowledge	Al Durra	31	1.645	0.091	2.115	0.083
	Al Nasr	32	1.654	0.082		
	Al Aqsa	22	1.662	0.099		
	Al Tahreer	20	1.688	0.077		
	EGH	19	1.711	0.091		
	Total	124	1.667	0.090		
Practice	Al Durra	31	1.525	0.116	3.145	0.017*
	Al Nasr	32	1.566	0.103		
	Al Aqsa	22	1.489	0.083		
	Al Tahreer	20	1.532	0.075		
	EGH	19	1.582	0.087		
	Total	124	1.539	0.100		

One way ANOVA *Significant at 0.05

Table (4.10) showed that there were no statistically significant differences in levels of knowledge (F= 2.115, P= 0.083), while significant differences existed in practice (F= 3.145, P= 0.017) about care of patients with bronchiolitis related to hospital. Post hoc LSD indicated that nurses from EGH showed significant higher practice compared to nurses from Al Durra and Al Aqsa hospitals.

Table (4.11): Differences in knowledge and practice related to governorate (n= 124)

Place of residency		N	Mean	SD	F	P value
Knowledge	North	18	1.661	0.090	2.194	0.074
	Gaza	40	1.639	0.088		
	Middle	29	1.673	0.087		
	Khanyounis	26	1.692	0.089		
	Rafah	11	1.710	0.088		
	Total	124	1.667	0.090		
Knowledge	North	18	1.542	0.125	1.293	0.277
	Gaza	40	1.550	0.107		
	Middle	29	1.503	0.089		
	Khanyounis	26	1.556	0.088		
	Rafah	11	1.550	0.080		
	Total	124	1.539	0.100		

One way ANOVA

Table (4.11) showed that there were no statistically significant differences in levels of knowledge (P= 0.366) and practice (P= 0.670) about care of patients with bronchiolitis related to governorate.

Table (4.12): Differences in knowledge and practice related to previous training (n= 124)

Variable	Received training	N	Mean	SD	T value	P value
Knowledge	Yes	20	1.676	0.082	0.450	0.654
	No	104	1.666	0.092		
Practice	Yes	20	1.558	0.100	0.941	0.348
	No	104	1.535	0.101		

Independent sample (t) test

Table (4.12) showed that there were no statistically significant differences in levels of knowledge ($t= 0.450$, $P= 0.654$) and practice ($t= 0.941$, $P= 0.348$) about care of patients with bronchiolitis related to previous training.

Chapter Five

Discussion

In this study, the result showed that nurses used CPAP and HFNC in the cases of mild bronchiolitis(69.4%) this results inconsistent with study conducted in England, Sinha et al., (2015) found that used nurses to CPAP and HFNC are conceptually attractive modalities for infants with severe bronchiolitis and may improve physiologic and clinical outcomes associated with respiratory distress and failure. Both deliver high concentrations of warmed, humidified oxygen precisely and accurately.

The findings of this study revealed that nurse use oxygen in nursing intervention to manage of bronchiolitis in pediatric department, the percentage was (95.7%). This results are consistent with another study conducted in Norway Mikalsen et al., (2016) which revealed that studies suggest that HFNC is safe to use in nursing practice, this well-tolerated and feasible method for delivering oxygen to infants and young children in a general pediatric ward. Most of the clinical studies in children have been observational studies conducted in infants with bronchiolitis. A positive clinical effect on various respiratory parameters has been detected, and studies suggest that HFNC may reduce the effort of breathing HFNC may also decrease the need of CPAP and invasive ventilation in infants and children. This result is similar to study made by Mayfield et al., (2014) in Australia who said HFNC therapy can be used by nursing safely in the pediatric ward regularly, where no serious adverse event has been observed. From the opinion of the researcher nurses use of the HFNC decrease need of CPAP and invasive ventilation in infants and children.

A study conducted in Canada revealed that the majority of respondents (62.8%) reported using corticosteroids in the pediatric department in their management of infants with bronchiolitis, the most common factor influencing their decision was illness severity Plint et al., (2015). This percentage is consistent with the researcher study, which confirmed the

majority of respondents (79.8%) of nurses working in the departments of children use corticosteroids in the treatment of bronchiolitis. From the opinion of the researcher nurses use of the corticosteroids in treatment of bronchiolitis that not effect and may be no benefit.

In this study, the result showed that the practice of nursing to chest physiotherapy improve the condition of children with bronchiolitis (91.1%), this results inconsistent with another study in order to provide an evaluation of the practice conducted in France of nursing physiotherapy of the chest and its impact on a large number of infants who received treatment in hospital in bronchiolitis, the result showed that no evidence of any difference in time to recovery of bronchiolitis was found, and estimates of effect nursing practice for chest physiotherapy excluded a clinically meaningful difference in time to recovery from bronchiolitis (Gajdos et al., 2010). Also this results inconsistent with another study was conducted in Australia (McKinnon & McNab, 2018) who conducted study to assess practice of nursing chest physiotherapy, which it showed that did not decrease severity or time to recovery, and did not decrease duration of oxygen supplementation , length of stay 'impression of physiotherapy benefit. From the opinion of the researcher the practice of nursing to chest physiotherapy improve the condition of children with bronchiolitis and decrease of severity or time to recovery.

In this study, the result showed that the majority of respondents (76.6%) of nurses working in the departments of children given oxygen at 90% saturation in the treatment of bronchiolitis. The result of this study consistent with a study conducted in Australia Cunningham et al., (2015), In children with acute viral bronchiolitis, nurses were giving oxygen at 90% saturation, So that they can resolve and relieve symptoms of bronchiolitis and maintain the respiratory system. The study also revealed, when managed to a 90% SpO₂ target, fewer infants needed oxygen, those that did needed it for a shorter duration,

and the infants were discharged home sooner. They also considered that management of infants with bronchiolitis to an oxygen saturation target of 90% or higher is safe and clinically effective. From the opinion of the researcher nurses use of oxygen in treatment of the bronchiolitis can resolve and relieve symptoms and maintain the respiratory system.

In this study, the knowledge of nurses (48.4%) about the causative agent of bronchiolitis that it is a bacterial infection, this result inconsistent with another study in Qatar showed that at least one virus was detected in (85.4%) of included children with single and multiple viruses in cases of bronchiolitis. Where nurses found that respiratory syncytial virus (RSV) was the most detected virus, accounting for 51.2% of cases (Janahi et al., 2017). From the opinion of the researcher the causative agent of bronchiolitis viral infection (RSV).

In this study the nursing knowledge of the common sound in bronchiolitis cases is wheezing of accounted for (91.1%), this result consistent with another study conducted in Croatia Petra et al., (2017) found that wheezing was the most frequent sign of bronchiolitis. From the opinion of the researcher the common sound in bronchiolitis cases is wheezing.

The findings of this study through the assessment of nurses for infants with bronchiolitis showed that some changes occurred include the first (90.3% of participant) feeding patterns (inadequate feeding) and dehydration, the second (79% of participant) lethargy and Inactivity. this results consistent with another study conducted in Australia prove that nurses assessment to infants with bronchiolitis is multifaceted and holistic in nature. Nurses note routinely by observation the physiological and behavioral change include changes in feeding patterns, distress, alertness, lethargy and activity, also nurses found a change in nutrition and sleep pattern for children with bronchiolitis, It is essential that the

importance of this physiological and behavioral information in assessing illness severity is recognized and valued (Davies et al., 2017). From the opinion of the researcher the feeding patterns and activity effect in the cases of bronchiolitis in children.

In this study, the result showed that the majority of respondents (79%) of nurses working in the departments of children they believe that bronchiolitis not self-limited disease. The result of this study inconsistent with a study conducted in Canada Sick Kids, (2012) typical bronchiolitis in infants is a self-limited disease, usually due to an acute viral infection In children with acute viral bronchiolitis. From the opinion of the researcher the bronchiolitis in children is a self-limited disease.

Chapter Six

Conclusion and Recommendation

6.1 Conclusion

Bronchiolitis is considered one of the earliest and most common causes of hospitalization among young children especially at the beginning of their lives, bronchiolitis is the leading cause of hospitalization for infants, It is also one of the most common causes of morbidity and mortality in children, because early in life, parents feel with fear and anxiety of the child. Bronchiolitis is an acute lower respiratory tract infection usually presenting in early childhood, Bronchiolitis is generally seasonal appearing most frequently during the winter months. This study examined assessment of nurses' knowledge and practice related to nursing care of children with bronchiolitis in Gaza strip.

6.2 Recommendations

In the light of the study results, the researcher recommends the following:

- Encourage decision makers to develop continuous education activities for nurses to improve knowledge and practice of the nurses skills.
- Establish of educational poster in nurses office contains most important interventional activities for bronchiolitis patient.
- The need to train the nurses who are working in pediatric department on strategies to help how to deal with bronchiolitis.
- Keeping up to date knowledge and practice related to nursing care of children with bronchiolitis.
- Encourage new researchers to conduct more studies on how to deal with cases of bronchiolitis of nurses.

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Annex (2): Sociodemographic Data (Arabic version)

البيانات الديموغرافية الاجتماعية	
العمر _____ سنة	
الجنس: <input type="checkbox"/> ذكر <input type="checkbox"/> أنثى	
الحالة الاجتماعية: <input type="checkbox"/> أعزب <input type="checkbox"/> متزوج <input type="checkbox"/> منفصل <input type="checkbox"/> مطلق <input type="checkbox"/> أرملة	
المسمى الوظيفي: <input type="checkbox"/> حكيم <input type="checkbox"/> رئيس قسم <input type="checkbox"/> مشرف تمريض	
المستوى التعليمي: <input type="checkbox"/> دبلوم <input type="checkbox"/> بكالوريوس <input type="checkbox"/> ماجستير <input type="checkbox"/> دكتوراه	
سنوات الخبرة: _____ سنة	
اسم المستشفى التي تعمل فيها: <input type="checkbox"/> الدرة <input type="checkbox"/> النصر <input type="checkbox"/> الأقصى <input type="checkbox"/> التحرير <input type="checkbox"/> الأوروبي	
العنوان: <input type="checkbox"/> شمال غزة <input type="checkbox"/> غزة <input type="checkbox"/> الوسطى <input type="checkbox"/> خان يونس <input type="checkbox"/> رفح	
هل حصلت على دورة خاصة بكيفية التعامل مع حالات التهاب الشعبات الهوائية؟ <input type="checkbox"/> نعم <input type="checkbox"/> لا	

Annex (3): Sociodemographic Data (English version)

<u>Socio Demographic Data</u>	
Age _____ years	
Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female	
Marital status: <input type="checkbox"/> Single <input type="checkbox"/> Married <input type="checkbox"/> Separated <input type="checkbox"/> Divorced <input type="checkbox"/> Widow	
Job title: <input type="checkbox"/> Nurse <input type="checkbox"/> Head nurse <input type="checkbox"/> Nursing supervisor	
Level of education: <input type="checkbox"/> Diploma degree <input type="checkbox"/> Bachelor degree <input type="checkbox"/> Master degree <input type="checkbox"/> Doctorate degree	
Years of experience: _____ years	
The name of the hospital where you work: <input type="checkbox"/> Al-Durra <input type="checkbox"/> Al-Nasr <input type="checkbox"/> Al-Aqsa <input type="checkbox"/> Al Tahreer <input type="checkbox"/> EGH	
Address: <input type="checkbox"/> Northern Gaza <input type="checkbox"/> Gaza <input type="checkbox"/> Central regions <input type="checkbox"/> Khan Younes <input type="checkbox"/> Rafah	
Have you got a course on how to deal with bronchiolitis? <input type="checkbox"/> Yes <input type="checkbox"/> No	

Annex (4): Structured self-administered questionnaire about knowledge (Arabic version)

لا	نعم	محور المعرفة
		1. يعتبر التهاب الشعبيات الهوائية أكثر أمراض الجهاز التنفسي شيوعاً بين الأطفال.
		2. التهاب الشعبيات الهوائية هو التهاب الأنسجة الشعبية (bronchial tissue).
		3. التهاب الشعبيات الهوائية هو السبب الرئيسي لدخول المستشفى للأطفال الأقل من 3 سنوات.
		4. تصنف التهاب الشعبيات الهوائية على أنها عدوى الجهاز التنفسي السفلي (LRTI).
		5. الصوت الشائع في التهاب الشعبيات الهوائية هو الصفير (wheezing).
		6. تزداد الإصابة بالتهاب الشعبيات الهوائية في فصل الشتاء.
		7. الأطفال الخدج (Prematurity) وانخفاض الوزن عند الولادة يزيدان نسبة الخطر بالإصابة بالتهاب الشعبيات الهوائية.
		8. من أكثر العلامات والأعراض لإتهاب الشعبيات الهوائية لدى الأطفال هو الإزرقاق (cyanosis).
		9. يمكن تشخيص التهاب الشعبيات الهوائية سريرياً (clinical diagnosis).
		10. زيادة معدل التنفس هو أحد العلامات المميزة في التهاب الشعبيات الهوائية.
		11. التهاب الشعبيات الهوائية يشفى لوحده (self-limited).
		12. العامل المسبب لإتهاب الشعبيات الهوائية هو العدوى البكتيرية.
		13. يعتبر التهاب الشعبيات الهوائية مرض وراثي.
		14. يزيد التدخين السلبي من معدل خطر الإصابة بالتهاب الشعبيات الهوائية.
		15. يعتبر مرض التهاب الشعبيات الهوائية مرضاً معدياً.
		16. يكون في التهاب الشعبيات الهوائية الشديدة معدل التنفس أقل من 70 مرة في الدقيقة الواحدة للأطفال الأقل من 3 سنوات.
		17. في التهاب الشعبيات الهوائية ضيق التنفس قد يتسبب في عدم التغذية الكافية للطفل وقلة سوائل الجسم.
		18. الرضاعة قد تكون طبيعية في الأطفال المصابين بالتهاب الشعبيات الهوائية البسيطة.
		19. توسع فتحتي الأنف (nasal flaring) والنهجة (grunting) موجودين في التهاب الشعبيات الهوائية المتوسط.
		20. السلوك العام في التهاب الشعبيات الهوائية الشديد هو الخمول والكسل.
		21. نسبة تشبع الأكسجين (Spo2) في التهاب الشعبيات الهوائية الشديد يكون أكثر من 88 %.

Annex (5): Structured self-administered questionnaire about knowledge (English version)

Knowledge domain	Yes	No
1. Bronchiolitis considered the commonest respiratory disease among children.		
2. Bronchiolitis is inflammation of bronchial tissue.		
3. Bronchiolitis is the main cause of hospitalization for children under 3 years.		
4. Bronchiolitis classified as lower respiratory tract infection.		
5. The common sound in bronchiolitis is wheezing.		
6. Bronchiolitis disease increase in the winter.		
7. Prematurity and low birth weight consider risk factor for bronchiolitis.		
8. The most sign and symptoms of bronchiolitis among children is cyanosis.		
9. Bronchiolitis may be diagnosed clinically.		
10. Increase respiratory rate is clinical feature in bronchiolitis.		
11. Bronchiolitis is self-limited.		
12. The causative agent of bronchiolitis is bacterial infection.		
13. Bronchiolitis consider genetic disorder.		
14. The passive smoking increase the risky rate of bronchiolitis.		
15. Bronchiolitis is an infectious disease.		
16. In severe bronchiolitis respiratory rate is less than 70 breath per minute for children under 3 years.		
17. Respiratory distress may cause inadequate feeding and poor hydration in bronchiolitis.		
18. Feeding is normal among children with mild bronchiolitis.		
19. Nasal flaring and grunting are present in moderate bronchiolitis.		
20. The general behavior in severe bronchiolitis is lethargy.		
21. The rate of oxygen saturation (Spo2) in severe bronchiolitis is more than 88%.		

Annex (6): Structured self-administered questionnaire about practice (Arabic version)

خطأ	صح	محور الممارسة
		1. أقوم بإعطاء الأكسجين بنسبة تشبع فوق 90 ٪ للمحافظة على الجهاز التنفسي.
		2. أقوم بإيقاف الرضاعة عن الطفل في التهاب الشعبيات الهوائية لمنع دخول الطعام للرتتين (aspiration).
		3. أقوم بإعطاء السوائل في علاج التهاب الشعبيات الهوائية لضمان التروية الكافية.
		4. أمارس العلاج الطبيعي للصدر لضرورته في تحسين حالة التهاب الشعبيات الهوائية.
		5. أعطي تبخيرة الفنتولين (Ventolin) للأطفال الذين يعانون من التهاب الشعبيات الهوائية.
		6. أقوم بإعطاء موسع الشعب الهوائية بالفم وهو علاج فعال للأطفال المصابين بالتهاب الشعبيات الهوائية.
		7. أوصي الأهل بالنظافة الشخصية للطفل لأنها تعجل الشفاء من التهاب الشعبيات الهوائية.
		8. أعطي الكورتيكوستيرويد الوريدي (Parenteral corticosteroid) للأطفال المصابين بالتهاب الشعبيات الهوائية.
		9. أستخدم المضادات الحيوية بشكل روتيني في علاج التهاب الشعبيات الهوائية.
		10. أقوم باستخدام تبخيرة الفنتولين كعلاج أولي مع التقييم خلال ساعة واحدة بعد الاستخدام.
		11. أستمر في إعطاء موسع الشعبيات الهوائية إذا لم يكن هناك تحسن للمريض مع بخاخات الفنتولين.
		12. أستخدم ضغط مجرى الهواء الإيجابي (CPAP) مع أنبوب الأنف على نطاق واسع في الأطفال الذين يعانون من التهاب الشعبيات الهوائية البسيطة.
		13. أقوم بضبط الضغط على جهاز التنفس الصناعي (CPAP) عادة من 4-8 سم H2O.
		14. أقوم بإعطاء مضاد الفيروسات في علاج التهاب الشعبيات الهوائية.
		15. أقوم بعمل تبخيرة الأدرينالين للتقليل من إنتفاخ الغشاء المخاطي للرتتين.
		16. أقوم بإعطاء الأكسجين عن طريق أنبوب الأنف التنفسي (nasal tube) أو قناع الوجه (o2 mask) في التهاب الشعبيات الهوائية.
		17. أقوم برفع رأس الطفل بمقدار 90 درجة لتحسين حالة التنفس لدى الطفل المصاب بالتهاب الشعب الهوائية.

Annex (7): Structured self-administered questionnaire about practice (English version)

Practice domain	True	False
1. I give oxygen at saturation above 90% to maintain respiratory system.		
2. I stop feeding the child with bronchiolitis to prevent aspiration.		
3. I give fluids to children with bronchiolitis to ensure adequate hydration.		
4. I do chest physiotherapy to improve the bronchiolitis status.		
5. I give Ventolin inhalation among children with bronchiolitis.		
6. I give an oral bronchodilator which is an effective treatment for children with bronchiolitis.		
7. I recommend the parents to keep personal hygiene of the child because it help the recovery from bronchiolitis.		
8. I give parenteral corticosteroid to infants with bronchiolitis.		
9. I use antibiotics routinely in the treatment of bronchiolitis.		
10. I use Ventolin inhalation as a primary treatment with evaluation within one hour after use.		
11. I continue to give bronchodilator if there is no improvement for the child with Ventolin nebulizer.		
12. I use continues positive airway pressure (CPAP) with nasal tube widely in children with mild bronchiolitis.		
13. I adjust the pressure on the ventilator (CPAP) usually from 4__8cm H2O.		
14. I give antiviral in the treatment of bronchiolitis.		
15. I give adrenaline inhalation to reduce the swelling of the mucous membrane of the lungs.		
16. I administer oxygen by nasal cannula or O2 mask in bronchiolitis.		
17. I raise the child head by 90 degrees to improve breathing in a child with bronchiolitis.		

Annex (8): Al- Quds University Approval Letter

Al Quds University
Faculty of Health Professions
Nursing Dept. –Gaza



جامعة القدس
كلية المهن الصحية
محافظة غزة - غزة

التاريخ: 2019/10/23

حضرة الأخ الدكتور/ رامي العبادلة المحترم
مدير عام تنمية القوى البشرية-وزارة الصحة

تحية طيبة وبعد،،،

الموضوع: مساعدة الطالب محمد حسني منصور

نشكر لكم دعمكم الدائم لمسيرة العلم والتعليم نود اعلامكم بأن الطالب المذكور اعلاه يقوم بعمل بحث كمتطلب للحصول على درجة الماجستير تخصص تمريض أطفال بعنوان:

“Assessment of Nurses' Knowledge and Practice Related to Nursing Care of Children with Bronchiolitis in Gaza Strip”

و عليه نرجو من سيادتكم التكرم بالموافقة على تسهيل مهمة الطالب في إنجاز هذا البحث حيث أن عينة الدراسة هي من فئة الممرضين والممرضات العاملين في أقسام الأطفال بمستشفيات وزارة الصحة (الدرة + النصر + الأقصى + الأوروبي + ناصر) التابعة لإدارتكم.

وتفضلوا بقبول وافر الاحترام والتقدير

23/10/2019

د. حمزة محمد عبد الجواد

استاذ مساعد في علوم التمريض
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Annex (9): Permission Letter of Ministry of Health

State of Palestine Ministry of health	x	دولة فلسطين وزارة الصحة
التاريخ: 29/10/2019 رقم المراسلة 387170		: رامي عبد سليمان العبادله المحترم
		مدير عام بالوزارة /الإدارة العامة لتنمية القوى البشرية - /وزارة الصحة
		السلام عليكم ,,,
		<u>الموضوع/ تسهيل مهمة الباحث// محمد منصور</u>
		التفاصيل // بخصوص الموضوع أعلاه، يرجى تسهيل مهمة الباحث/ محمد حسني منصور الملتحق ببرنامج ماجستير التمريض - تخصص تمريض أطفال - جامعة القدس أبوديس في إجراء بحث بعنوان:- "Assessment of Nurses' Knowledge and Practice Related to Nursing Care of Children with "Bronchiolitis in Gaza Strip" حيث الباحث بحاجة لتعبئة استبانة من الممرضين والمرضات في أقسام الأطفال في المستشفيات (الدرية، الأوربي، ناصر، شهداء الأقصى، النصر للأطفال)، بما لا يتعارض مع مصلحة العمل وضمن أخلاقيات البحث العلمي، ودون تحمل الوزارة أي أعباء أو مسئولية. وتفضلوا بقبول التحية والتقدير،،، ملاحظة / ● البحث المذكور حصل على موافقة لجنة أخلاقيات البحث الصحي (لجنة هلسنكي) تسهيل المهمة الخاص بالدراسة أعلاه صالح لمدة 3 أشهر من تاريخه.
		محمد إبراهيم محمد السرساوي مدير دائرة/الإدارة العامة لتنمية القوى البشرية -
		
		المرفقات ■ استبانة محمد منصور.docx

Annex (10): Helsinki Committee Approval Letter



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: 2019/10/7

Number: PHRC/HC/619/19

الاسم:

Name: Mohammed Hosni Mansour

We would like to inform you that the committee had discussed the proposal of your study about:

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:

Assessment of Nurses' Knowledge and Practice Related to Nursing Care of Children with Bronchiolitis in Gaza Strip

The committee has decided to approve the above mentioned research. Approval number PHRC/HC/619/19 in its meeting on 2019/10/7

و قد قررت الموافقة على البحث المذكور عاليه بالرقم والتاريخ المذكوران عاليه

Signature

Member

7/10/2019

Chairman

Member

Specific Conditions:-

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.



E-Mail: pal.phrc@gmail.com

Gaza - Palestine

فلسطين - غزة
شارع النصر - مفترق العيون

Annex (11):Consent Form

نموذج موافقة

جامعة القدس - كلية المهن الصحية

عمادة الدراسات العليا

برنامج ماجستير تمريض الأطفال

عزيزي المشارك:

أرجو منك المشاركة في دراسة بحثية بعنوان:

" تقييم معرفة وممارسة التمريض فيما يتعلق برعاية الأطفال المصابين بالتهاب الشعبات الهوائية في مستشفيات

قطاع غزة"

"Assessment of Nurses' Knowledge and Practice Related to Nursing Care of Children with Bronchiolitis in Gaza Strip"

لديك الحق في معرفة ما سيطلب منك القيام به بحيث يمكنك أن تقرر ما إذا كنت تريد المشاركة أم لا، ومشاركتك تعتبر طوعية، يعد هذا البحث شرطاً أساسياً لمتطلبات درجة الماجستير من كلية الدراسات العليا - برنامج تمريض الأطفال - جامعة القدس، الباحث نفسه يمول هذا البحث، لذلك، أمل أن تجيب على جميع الأسئلة لأن رأيك يمثل أهمية كبيرة لهذه الدراسة. سيستغرق هذا الاستبيان 15 دقيقة تقريباً، سيتم استخدام هذا البحث فقط لأغراض البحث العلمي فقط مع ضمان السرية التامة. لطرح الأسئلة حول الدراسة اتصل بالباحث على رقم الهاتف المحمول 0598701875.

شكراً لحسن تعاونكم

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Annex (12): Time Table

Activity	Duration	June 2019	July 2019	Aug. 2019	Sept. 2019	Oct. 2019	Nov. 2019
Writing research Proposal	1 month						
Preparation of the theoretical framework	1 month						
Review previous literature	1 month						
Questionnaire design & sampling	1 month						
Obtaining ethical approval from MOH and Helsinki	1 week						
Pilot study	2 weeks						
Data collection	1 week						
Data entry and analysis	2 weeks						
Research and abstract writing	1 week						

العنوان: تقييم معرفة وممارسة الممرضين فيما يتعلق برعاية الأطفال المصابين بالتهاب الشعبات الهوائية في قطاع غزة

إعداد: محمد حسني منصور

إشراف: د. محمد الجرجاوي

الملخص:

المقدمة: يُعتبر التهاب الشعبات الهوائية أحد الأسباب المبكرة والأكثر شيوعًا للعلاج في المستشفيات بين الأطفال الصغار خلال أول عامين من حياتهم ، ويعد هو السبب الرئيسي لدخول الرضع للمستشفيات ويقدر عددهم بحوالي 3.4 مليون حالة دخول عالميًا. الهدف: من هذه الدراسة هو تقييم معرفة وممارسة الممرضين فيما يتعلق بالرعاية التمريضية للأطفال المصابين بالتهاب الشعبات الهوائية في قطاع غزة. المنهجية: أجريت هذه الدراسة الوصفية في خمس من المستشفيات الرئيسية مستشفى غزة الأوروبي ومستشفى التحرير والأقصى والنصر والدرّة وكانت عينة الدراسة 124 ممرض من كلا الجنسين من مختلف الدرجات العلمية ويعملون في قسم الأطفال. ولجمع البيانات، استخدم الباحث استبيانًا ذاتيًا حول المعرفة والممارسة التمريضية. وقد شمل تحليل البيانات على التكرار، والنسبة المئوية، واختبار الانوفا واختبار T . النتائج: أظهرت نتائج الدراسة أن متوسط عمر الممرضين كان 28.22 ± 5.95 سنة. كان المعدل العام للمعرفة بين المشاركين في الدراسة حول رعاية الأطفال الذين يعانون من التهاب الشعبات 66.78 % ، والتي كشفت عن مستوى معتدل من المعرفة. علاوة على ذلك ، كان المعدل العام لممارسة رعاية الأطفال الذين يعانون من التهاب القصبيات 53.93 % ، والتي كشفت عن انخفاض مستوى الممارسة العملية. الخلاصة: خلصت الدراسة إلى أن المشاركين في الدراسة لديهم مستوى معتدل من المعرفة حول رعاية المرضى الذين يعانون من التهاب الشعبات الهوائية، ومستوى منخفض من الرعاية العملية لمرضى التهاب الشعبات الهوائية. التوصيات: تشجيع صانعي القرار على تطوير أنشطة التعليم المستمر للممرضين لزيادة المعرفة وممارسة مهارات التمريض وإنشاء ملصق تعليمي في مكاتب التمريض يحتوي على أهم التدخلات التمريضية في حالات التهاب الشعبات الهوائية للأطفال.