Arab American University

Faculty of Graduate Studies

Assessment of knowledge &practice among emergency nurses toward neonatal resuscitation in Hebron hospitals

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This thesis was submitted in partial fulfillment of the requirements for the Master's degree in Emergency Nursing

September/ 2023

Thesis Approval

Assessment of knowledge and practice among emergency nurses toward neonatal resuscitation

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This thesis was defended successfully on 23\9\2023 and approved by:

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Declaration

I certify that, unless otherwise noted, the thesis I submitted for my master's degree in emergency nursing at the Arab American University is the product of my own research, and that this work (or any portion of it) has not previously been submitted to another university for a higher degree.

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Date: 8\ April\2025

Dedication

I dedicate this work to my father and mother. To my beautiful family, which is source of love. To my dear friends from the medical field in hospitals who are on the job, who are doing the impossible to save person's life, and to all those who helped me to accomplish this work. For those who are always in my heart and who give me strength to continue my path of success. To all the martyrs and injuries in Palestine, and to all the stationed cities of Palestine, from the city of Jenin Al-Qassam to Gaza Hashem. And finally, to everyone who helped me finish this work.

Acknowledgment

First and foremost, I want to thank Allah. He was, is, and always will be the most important source of support and direction. Through numerous disappointments, His assistance kept me going, and when my frustrations tended to lead me astray, His direction helped me get back on track.

I want to appreciate unique folks who always gave me everything I needed or asked for. They always found the time, no matter what the work was or how busy they were. These appreciations are sent to my parents, who provided the most assistance in making this effort a success.

I'd like also to thank Arab American University represented by Dr. Ali Zaiden. Special thanks for Dean of the College of Graduate Studies Dr. Nouar Qutob, the great leader. And I'd like to extend my sincere gratitude to the thesis' advisor, Dr. Mohammad Al-Jallad, for his efforts and support during the writing of this thesis. His expertise and unending assistance were a terrific asset from which I gained a lot of knowledge. He expressed great enthusiasm for the thesis, which encouraged me to keep working hard.

It is challenging to list everyone who contributed to the creation of this thesis byname. Nevertheless, despite how simple it may have been, I appreciate their assistance. Finally, I owe a huge debt of gratitude to my coworkers and friends for helping me get through college and making those years the happiest of my life.

Abstract

Background: The neonatal period is the most dangerous stage of life, as mortality and morbidity rates are higher compared to other stages of life. Globally, about 2.5 million children die before they turn a month old. Perinatal asphyxia and extreme prematurity are the two complications of pregnancy that most frequently require complex resuscitation by skilled personnel. So adequate knowledge and practice about neonatal resuscitation play a major role in early diagnosis and management to provide correct neonatal resuscitation and to prevent complications. Objective: The aim of the study is to assess knowledge, practice among nurses toward neonatal resuscitation in Hebron hospitals.

Methods: A cross-sectional study design was conducted among 151participants. Self-administered questionnaire used to collect data. Data was coded and entered using a restricted data Excel file, then exported to SPSS version 25 software for analysis. Logistic regression was computed to see the possible associations of factors with the dependent variables and p-values of less than 0.05 in multivariate analysis was declared significant.

Results: 151 participants were included with a response rate of 100%. About 9.3% and 68.9% of the participants had good knowledge and practice towards resuscitation respectively. There was significant relationship between knowledge level and age(p-value=0.001) but there is no significant relationship between knowledge level and gender(p-value=0.16), training(p-value=0.91) and guidelines(p-value=0.85).There was a significant relationship between knowledge level and supportive supervision (p-value=0.007).Whereas present of guidelines (p-value=0.028),training(p-value=0.011) and

present of supportive supervision (p-value=0.000) were significantly associated with the good performance of the participants.

Conclusion: Nowadays most hospitals offer neonatal resuscitation training programs, supervision and neonatal resuscitation guidelines for their nurses to improve knowledge and practice toward neonatal resuscitation, so this is nurse's responsibility to attend this training programs and to stick with guidelines in order to sure that they give the best quality of resuscitation to neonates.

Key words: Neonate, asphyxia, Resuscitation, Knowledge, Practice, Nurse

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Chapter one

Introduction

1.1Background

A newborn is considered a precious treasure not only for its parents but also for the whole world. The newborn baby is the most beautiful event, so maintaining newborn health is the responsibility of parents, family, society and the world at large. As the newborn is weak, tiny, and powerless so newborn completely relying on others since the first breath in this life. The early 4 weeks of a human's life called neonatal period. Neonatal period is characterized by a rapid and lots of critical events that can occur and affect the child's life (MULI, 2020)

The neonatal period is the most dangerous stage of life, as mortality and morbidity rates are higher compared to other stages of life (UNICEF, 2017). Globally, about 2.4 million children die before they turn a month old (WHO,2021).

Perinatal asphyxia and extreme prematurity are the two complications of pregnancy that most frequently require complex resuscitation by skilled personnel(Bogale et al., 2021)(Volsko& Barnhart, 2019). World Health Organization (WHO) explains birth asphyxia as ―failure to initiate and sustain breathing at birth. Birth asphyxia occurs when an inadequate amount of oxygen is delivered to the fetus, it is the third major cause of neonatal death in worldwide and accounts for an estimated 24% of neonatal death each year (Ahmed et al., 2021).

Newborn resuscitation is an immediate and important intervention to help the newborn who has breathing problems and circulatory problems. As the first few moments of a newborn's life are considered one of the most important and most dangerous moments, the healthcare provider must, therefore, provide urgent care and effective resuscitation to the newborn to prevent complications (Bogale,2017).

Problems like birth asphyxia leading to mortality can be averted by training health care providers who attend to neonates on the proper procedures of resuscitating neonates, to guarantee that they acquire the knowledge and skills they need to perform resuscitation timely and effectively (World Health Organization, 2012).

In cardiac arrest patients, effective cardiopulmonary resuscitation keeps essential organs perfused and is associated with a higher survival rate and better neurologic outcomes (Kleinman et al., 2015). In contrast to adult resuscitation, where chest compressions (CC) are the most crucial component, pediatric and neonatal resuscitation places a higher priority on ventilation (Atkins et al., 2015). Although good ventilation occurs, circulatory support with chest compressions is necessary in order to achieve meaningful performance if the heart rate is 60/min)(Wyckoff et al., 2015).

According to the most recent international standards, newborn resuscitation should be performed using the two-thumb encircling technique across the lower part of the sternum at a depth of about one-third of the chest wall's anterior-posterior (AP) diameter. The study by Meyer et al. that showed a third of the external AP chest diameter to be a more efficient and safer CC depth for neonatal resuscitation using chest computed tomography (CT) during

the neonatal period, defined as 28 days after birth, is the basis for this recommendation depth in neonate cardiac arrest (Wyckoff et al., 2015).

Effective neonatal resuscitation is a major factor in reducing neonatal mortality rate. For resuscitation to be effective, it requires Knowledge and practice understanding by the healthcare provider working in the labor, maternity, and newborn units to have adequate skills to initiate and maintain cardiopulmonary functioning (Ahmed, 2022).

Approximately 10% of newborns require some form of resuscitation intervention immediately after birth and less than 1% need advanced neonatal resuscitation so adequate knowledge and practice about neonatal resuscitation play a major role in early diagnosis and management to provide correct neonatal resuscitation and to prevent complications (Abrha et al., 2019).

Neonatal resuscitation training of health workers is critical given the high number of neonates who need help to breathe (Wall et al., 2009). Moreover, nearly 1 in every10 neonate need assistance of some kind like tactile stimulation, airway clearing, or positioning (Kattwinkel et al., 2009)

1.2 Statement of the problem

Globally, about 4 million newborn deaths occur each year, with 99% of these deaths occurring in low- and middle-income countries (Alhassanet al., 2019). Globally, neonatal asphyxia has been identified as a leading cause of neonatal death worldwide, around 23% of all neonatal deaths occur due to birth asphyxia (Aslam et al., 2014)

According to (Murila et al., 2012), the observations of his study reflect an overall poor performance amongst the health care personnel sampled on neonatal resuscitation, where neonatal resuscitation may be a big challenge, it's going to be a mirrored image of ill preparation of health care personnel during training.

Available evidence suggests that effective neonatal resuscitation provided by healthcare providers with good practice & knowledge of neonatal resuscitation can significantly reduce neonatal mortality rates (Alhassan et al., 2019).

In Palestine, there is no studies that have been conducted under this thesis, and implementation of such programs for neonatal resuscitation is still a challenge, so there is a need for this kind of study to determine the level of knowledge and practice among nurses in Palestine.

1.3 Significance of the study

To obtain a satisfactory impact and a good outcome on the neonatal mortality rate, the health care provider is expected to have good knowledge& practice to apply neonatal resuscitation. So, it is necessary to assess the knowledge and practice of nurses to improve and develop good neonatal resuscitation. Nurses must have sufficient knowledge, good practice and keep abreast of the latest updates regarding newborn resuscitation guidelines. When the nurses have high knowledge and good practice, the mortality rates and complications resulting from perinatal asphyxia will decrease and therefore the cost of treatment will decrease.

The information that will be obtained from this study will: Firstly, helping hospitals to know the weaknesses points of their nurses and thus trying to develop nurses through training courses on neonatal resuscitation. Secondly, assist in developing and establishing guidelines for neonatal resuscitation to improve knowledge and practice about neonatal resuscitation. Finally, this study will be as a cornerstone and encouragement for others to conduct research related to neonatal resuscitation, as Palestine does not have enough studies related to neonatal resuscitation.

1.4 Purpose of the study

This study aimed to determine the level of knowledge practice among emergency nurses toward neonatal resuscitation in Hebron hospitals.

1.5 Specific Objectives

- To examine knowledge level of emergency nurses toward neonatal resuscitation in Hebron hospitals.
- To determine practice level of emergency nurses toward neonatal resuscitation in Hebron hospitals.
- To determine the relationship between Provider characteristics and level of knowledge & practice of emergency nurses toward neonatal resuscitation in Hebron hospitals.
- To investigate association between knowledge and practice level of emergency nurses with institutional characteristics.

1.6 Research Questions

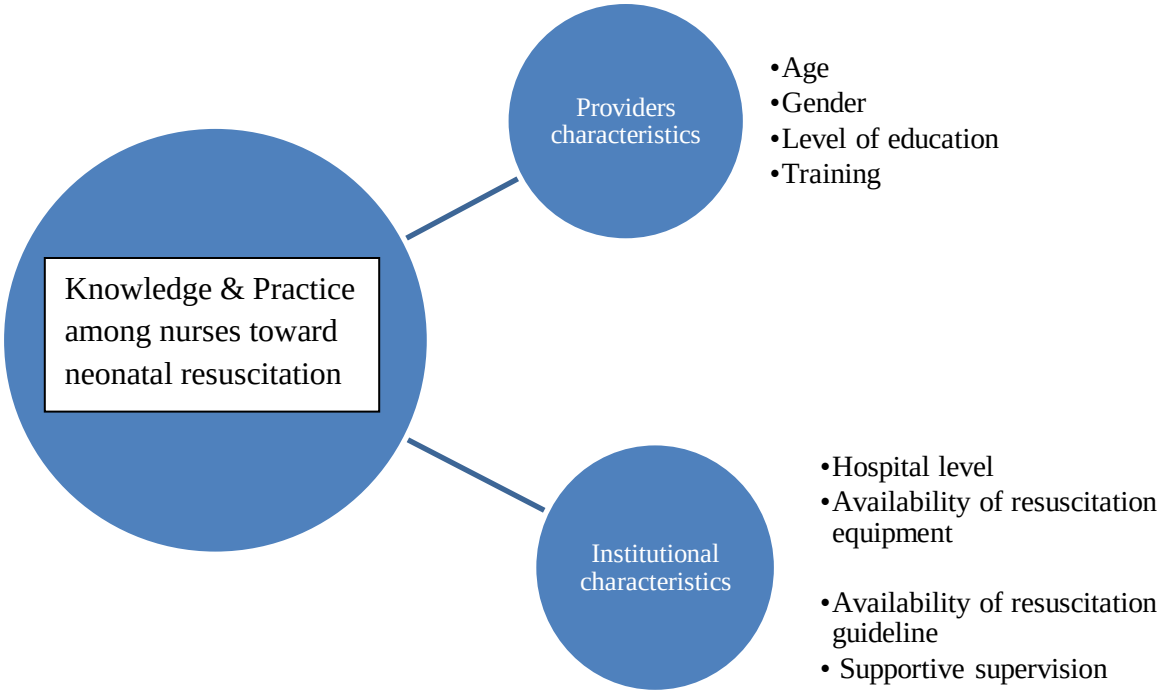
1. What is the level of knowledge of emergency nurses toward neonatal resuscitation in Hebron hospitals?
2. What is the level of practice of emergency nurses toward neonatal resuscitation in Hebron hospitals?
3. What is the relationship between demographic data and level of knowledge & practice of emergency nurses toward neonatal resuscitation in Hebron hospitals?

1.7 Research Hypothesis

1. There is no statistically significant difference of emergency nurses' characteristics (age, Gender, level of education, training) and institutional characteristics (hospital level, availability of resuscitation equipment, availability of resuscitation guideline, supportive supervision and work load) at ($\alpha \leq 0.05$) on their level of knowledge toward neonatal resuscitation
2. There is no statistically significant difference of emergency nurses' characteristics (age, Gender, level of education, training) and institutional characteristics (hospital level, availability of resuscitation equipment, availability of resuscitation guideline, supportive supervision and work load) at ($\alpha \leq 0.05$) on their level of practice toward neonatal resuscitation

1.8 Conceptual framework

Conceptual framework for this study was adapted from literatures reviewed. As illustrated in the diagram below, knowledge and practice level of nurses toward neonatal resuscitation can be affected by different provider and institutional characteristics.



1.9 Study variables

- Dependent variables:
    1. Level of Knowledge toward neonatal resuscitation.
    2. Level of Practice toward neonatal resuscitation.
- Independent variables: Demographic data which include:
    1. Providers characteristics: (age, gender, level of education and training)
    2. Institutional characteristics: (hospital level, availability of resuscitation equipment, availability of resuscitation guidelines and supportive supervision)

1.10 Summary

In this chapter we will discuss the neonatal resuscitation definition and discuss the problems that need to neonatal resuscitation. Effective resuscitation of the neonate needs sufficient knowledge and practice to save the life of neonate and to prevent complications. Because of the importance of this thesis, we decide to establish this study with the aim of assessing of knowledge &practice among emergency nurses toward neonatal resuscitation in Hebron hospitals.

Chapter two

literature review

2.1 Introduction

This chapter will discuss the literature about the assessment of knowledge & practice among emergency nurses toward neonatal resuscitation. In order to identify the knowledge gaps in the literature, to identify the keys variables measured in previous studies. This chapter is divided into three sections which are knowledge towards neonatal resuscitation, practice towards neonatal resuscitation, and knowledge &practice towards neonatal resuscitation.

2.2 Search Strategy

A comprehensive and systematic search process was conducted to assessment of knowledge & practice among emergency nurses regarding neonatal resuscitation in Hebron hospitals. The search process targeted articles published in peer reviewed journals in English language from 2008 to 2023 on word that are relevant to the assessment of knowledge & practice among nurses regarding neonatal resuscitation. These old articles about were excluded neonatal resuscitation.

The search conducted by using the following online bibliographic databases: Cumulative Index to Nursing Allied Health Literature (CINAHL), Pro Quest, MEDLINE, Google Scholar, SAGE Journals, Wiley on Line Library, and Science Direct. Database search conducted by using the following keywords: knowledge towards neonatal resuscitation, Practice towards neonatal resuscitation, knowledge and practice towards neonatal

resuscitation, nursing knowledge towards neonatal resuscitation, nursing practice towards neonatal resuscitation, knowledge and practices of nursing towards neonatal resuscitation.

2.3 Overview of neonatal resuscitation

Newborn resuscitation is a group of medical interventions that aims to maintain the airway and blood circulation of newborns until the age of 28 days. About 10% of newborns need some degree of resuscitation with stimulation, suctioning and bag mask ventilation, and less than 1% need advanced resuscitation (Perlman et al., 2015).

Neonatal resuscitation begins with assessment of the child's condition with stimulation, suctioning, chest compression, medication administration and volume expansion according to newborn heart rate (Wyckoff et al., 2015b). Resuscitating newborns in a proper and skillful manner is very important to reduce asphyxia associated with neonatal morbidity and mortality. Skillful health care provider who trained, will successfully resuscitate an average of 84% of neonate with asphyxia. Although resuscitation by trained and skill full Health Care Provider can avoid about 30% of all neonate deaths, just one-eighth of neonates had access to this intervention (Wall et al., 2009) & (Lee et al., 2011).

In Malawi 75% of healthcare providers were trained, 75% of facilities were equipped with resuscitation equipment but access to resuscitation had 38%. The same, in Uganda 44% of healthcare providers were trained, 53% of health facilities were equipped with resuscitation equipment, but access to resuscitation had remained only 25%. In the same year (Narayanan &Vivio, 2016). Ethiopian government had trained 56% of healthcare providers and equipped 59% of health facilities, however, access is limited to only 8% of the neonate. According to the Ethiopian Pediatrics Society of 2013, out of 43,393 births in 116 health

facilities, 2090 babies with asphyxia were successfully resuscitated by health workers who had received training. An assessment of 60 health facilities with 8,080 deliveries; 212 needs resuscitation at birth and 180(85%) of them stayed alive after resuscitation while 453(6%) were stillbirth (Lily et al., 2014).

2.4 Knowledge towards neonatal resuscitation

The competence of the nurse in resuscitating newborns is crucial for newborns. However, the results of some studies have shown that there is a huge gap in knowledge towards neonatal resuscitation and the care of newborns(Basu, 2014)(Gebreegziabher et al., 2014). A study in Kenya with 192 participants showed that only 68 participants (35.4%) had sufficient and good knowledge about neonatal resuscitation(score of 85% and more), while the remaining participants (70%) scored below than average in all Newborn resuscitation steps (Murila et al,. 2012)

A cross-sectional study design was conducted in Gandaki included 340nurse/midwives to assess the factors associated with knowledge, attitude and skills on neonatal resuscitation among nurse midwives in the Dodoma region, Tanzania. The results of this study showed that, more than half of the respondents 94% had adequate knowledge on neonatal resuscitation (Mbinda, 2021). Contrary to the results of previous study, a descriptive cross-sectional study was conducted on 427 midwives and nurses in Eastern Ethiopia had revealed that most of participants 90.2% had poor knowledge about neonatal resuscitation (Sintayehu et al., 2020).

A descriptive cross sectional study design in Parse district showed that93% of the participants had insufficient knowledge regarding neonatal resuscitation, meaning that the

score was less than 85%, and that 90.7% of the participants had inadequate skills towards neonatal resuscitation (score less than 85%). The study revealed that the relationship between the score of skill and the score of knowledge is a significant positive correlation with a statistical relationship between the degree of knowledge and the degree of skill for participants toward neonatal resuscitation ($p<0.0018$) (Gauro et al., 2018)Contrary to the results of previous two studies, a descriptive survey research design in Nigeria had revealed that most of the participating nurses have very good knowledge of the basic skills needed to manage birth asphyxia (Ezendukaet al., 2016)

In 2013 a study in Poland showed the results of the level of knowledge about proper chest compression, depth of chest compression and correct dose of adrenaline were 67%, 71%,52% respectively. These results indicate to incomplete knowledge about neonatal resuscitation(Szarpak, 2013). Another cross-sectional study in Ethiopia showed that the mean knowledge scores of nurses were 43.9%. In this study 64.2% of nurses respond to the proper suctioning, 66.7% Effective mask ventilation, 60.4% depth of chest compression during cardiopulmonary resuscitation and 50.9% the dose of adrenaline for neonates during CPR. This study showed that knowledge level of nurses toward neonatal resuscitation were sub-standardized (Gebreegziabheret al., 2014)

A descriptive study included 100 nursing students was conducted to assess the knowledge toward nursing students toward neonatal resuscitation, and to find the relationship between knowledge and selected demographic data. The results of this study showed that the knowledge score of the majority of the sample (69%) were had average knowledge toward neonatal resuscitation, 18% were had poor knowledge, and 13% had good knowledge

toward neonatal resuscitation. Also, this study finds that there is no association between the demographic data and knowledge scores (Umarani, 2014). Another study was conducted in the same purpose of the previous study. The study showed that majority of nursing students had average knowledge (60.43%), good knowledge (31.03%), and poor knowledge (8.62%) toward neonatal resuscitation. It was also showed that there was significant association between gender, class of students and profession of parents (Kaur&Sumeriya,2017).

A study in northeast Ethiopia showed that out of 30 BSC nurses, one-third (66.7%) had a poor degree of knowledge about neonatal resuscitation. Of a total of 13 newborn nurses, more than half of 53.8% have similarly weak cognitive scores out of a total of 8 more than half of all pediatric nurses (62.5%) have weak cognitive scores toward neonatal resuscitation (Biset et al., 2018).

2.5 Practice towards neonatal resuscitation

Many studies show that nurses have a major gap in all areas of newborn care and neonatal resuscitation practices. On the other hand, some of the results of previous studies did not show any competency gap towards newborn resuscitation practices and newborn care (Gebreegziabher et al., 2014) & (Basu, 2014).

Results of a study conducted in Kenya on neonatal resuscitation skills showed that from various neonatal resuscitation steps, airway clearance was the most commonly performed step (83%), followed by drying and stimulation (60%), while the least performed step was bag-mask ventilation (45%) (Shikuku et al., 2017).

The results of a study conducted in Baghdad in which 40 nurses in the delivery unit participated showed that 30% had poor practice, 70% of them had acceptable practice and

none of them had a good practice on neonatal resuscitation (Khudair, 2012). The results of a study conducted in Nigeria were similar to the results of the previous study, where it found that only about 10% of the participants in the management of asphyxia have high level of practice. These results suggest that increased neonatal mortality associated with asphyxia may be associated with poor neonatal resuscitation practices (Ezenduka et al., 2016).

Results of studies in India showed that nurses had low levels of practice in the area of pre-performance steps (32.66%), initial steps (41%), chest compression (42.94%), positive pressure ventilation (PPV) (46.1%) and Medication administration (49.88%) (Subbiah et al., 2012). Another study in India among neonatal ICU nurses showed that 60% of nurses had an average practice, 20% had good practice and 20% had poor practice score in relation to the selected aspects for neonatal resuscitation (Mahaling, 2015). Another study in India showed that the mean post-implementation fifth-degree nursing practice for nursing workers in relation to neonatal resuscitation (39.37+ 2.73) was higher than the pre-execution degree for nursing personnel (30.10+ 2.35) (Parvinder et al., 2015).

A cross-sectional study was conducted in Ethiopia among nurses and midwifes showed that when asked what to do during a neonatal resuscitation, three-quarters of them mentioned applying the mask to their chin, mouth and nose. But only 24.5% mentioned that assisted ventilation should be 40 times per minute for one minute, 81.6% mentioned the need to keep the newborn warm (Haile-Mariam et al., 2012). Another cross-sectional study in Ethiopia showed that the average skill score for nurses was 55.8%. The percentage of

correct answers provided by nurses was> 50% for 3 of 12 skill questions and <50% for 9 out of 12 skill questions (Gebreegziabher et al., 2014).

In Iran, a study among 48 nursing and Midwifery students based on Topical Structural Clinical Examinations (OSCE) showed that 84.6% of students had poor skills in neonatal resuscitation with an average of 41% which is less than 50% of the total score. Among the various resuscitation steps, it was found that the correct performance of students was: 38% the initial resuscitation steps, 49% positive pressure ventilation (PPV), 20% intubation, 72% chest pressure, 45% medications and 29% for advanced resuscitation (Malekzadeh et al., 2015).

2.6 Knowledge and Practice towards neonatal resuscitation

A study with an impact evaluation of the implementation was done following a before-after study design. It was conducted in India with 144 nurses that participate in this study. The results showed that the knowledge scores and skills scores among participants turned out from (35% to 86%) & (15% to 90%) respectively, which means there was improvement in knowledge scores and skills scores after training. This study also showed that there was a significant retention of knowledge (52%) and skills (79%) after one year, although there was a gap in knowledge and skills observed after one year (Das et al., 2018).

Results in a study was conducted in South Sudan showed a marked decline one year after training. Knowledge increased from (42.5% to 97%) pre-and posttest but declined to 84.5% three months after training and further declined to 69.4% one year after training. Skills increased from (26.1% to 94.4%) pre-and posttest, stayed at 94.4% at three months, and decreased to 77.0% at one year. Simple resuscitation scores increased from (26.9% to

88.8%) pre- and posttest stayed roughly at three months and declined to 76.4% at one year. For advanced resuscitation, scores declined from 90.9% posttest to 76.9% in one year. The assessments at one year showed a need for support and practice, particularly with bag-mask ventilation (Draiko et al., 2019).

Another cross-sectional study in India showed that among 93 nurses, only 34% of participants had a score of 85% and above in all steps of neonatal resuscitation. Only 67% and 81% of participants scored above 85% in the preparation/initial steps and Bag-mask ventilation. This study also showed that their performance in the step of chest compression was very poor; only 15% of participants scored above 85% (Suresh et al., 2017).

The study was conducted in western Nigeria with about 179 nurses and it was found that 31.8%, 53.1%, 58.1% and 35.2% had access to radiant warmers, ambo-bags, suction machine and oxygen delivery units, respectively. The knowledge of the participants was better for evaluation than for appropriate action (95.5% v. 49.7%). Nurses' knowledge and practice about appropriate measures to take during neonatal resuscitation were poor. There is a need for frequent and intensive courses on neonatal resuscitation (Ogunlesi et al., 2008).

A study in Sri Lanka among the nursing staff showed that 79.3% didn’t know anything about how to provide positive pressure ventilation or chest compression and that the rest of the participants didn’t have sufficient knowledge about this, and only one or two of the participants knew exactly that. In the same study, the results also showed that the nurses' practice was incomplete on average in preparing materials for neonatal resuscitation. In the

initial steps for neonatal resuscitation, most of the participants performed it incorrectly and incompletely. However, the nurses' performance in the last two steps was very poor for positive pressure and chest compression. Moreover, it was found that in the last two steps they have average knowledge from books but don’t have the practical experience in that (Basu, 2014).

2.7 Summary

This chapter provides some findings from previous studies that indicate that there is noticeable weakness in nursing knowledge and practice toward neonatal resuscitation. Therefore, intensive training courses could be conducted to increase both nursing knowledge and practice in neonatal resuscitation. Asther training aims to improve nursing knowledge and practices toward neonatal resuscitation, thus reducing neonatal mortality rates.

Chapter Three

Methods & Materials

3.1Introduction

The purpose of this study is to determine the level of knowledge & practice among Emergency nurses toward neonatal resuscitation in Hebron hospitals. This chapter presents a detailed description of the research methodology: study design, setting, population, participant's eligibility criteria, study population, Sampling, measurements, data collection, data analysis plan and ethical considerations.

3.2Research Design

This study primarily applied a quantitative research approach with a touch of descriptive cross-sectional study to describe and provide information about the level of knowledge and practices among emergency nurses toward neonatal resuscitation in Hebron hospitals without attempting to manipulate or control the participants.

3.3Study Setting

This study includes sample of nurses who work in the Emergency departments. The nurses were selection from nine hospitals in Hebron city which is located in southern Palestine. five governmental hospitals, three referral hospital, and one private hospital were chosen. All of these hospitals have Emergency departments.

3.4.1 Study Population

The study population was all the registered nurses employed to work in the Emergency departments in the selected hospitals in Hebron city and met the inclusion criteria.

Population number was 161 nurses and we excluded 10 nurses of them who participated in pilot study.

3.4.2 Sample Method

The study included all nurses in emergency departments, as the research sample are all nurses working in Emergency departments at Hebron hospitals for a period of not less than six months, and those who meet to inclusion criteria, the number of participants in the research depends on the percentage of response rate to participation in the research, all emergency nurses in Hebron hospitals is 151nurses with response rate 100% (The real number of the sample was 161 nurses, but 10 nurses who participated in pilot study were excluded)

3.4.3 Inclusion Criteria

The inclusion criteria included: participants who are qualified, participants who have worked in Emergency departments for at least six months, and who could read, speak, & write English were invited to participate in this study.

3.4.4 Exclusion Criteria

The exclusion criteria included: Nurses who didn't work in Emergency departments, who had less than six months work experience and who couldn't read, speak & write English.

3.5 Data Collection procedure

Ethical reviewing and approval for this study was taken by the Health Research Ethics Committee of the AAUP, Permission was granted from all selected hospitals to recruit participants to our study. The researcher met with the nurses in the hospitals to explain the study and they presented the research thesis and explained it to the chief of nursing, departments, and nurses who were participated.

The researcher selected participants who working in Emergency departments, and invited potential participants to join the study on the first visit to hospitals.

The researcher provided the participants with a full disclosure of the study. If the participants are ready to move forward, consent has been obtained. 151 nurses were selected from the Nine hospitals chosen for study, after giving written informed consent to participate in the study. The researcher collected data from nine hospitals selected in Hebron city through modified and derived questionnaires. The questionnaire consists of three sections: First section is demographic data which include two parts: providers characteristics and Institutional characteristics, second section is knowledge assessment questions and third section is Practice Assessment questions.

3.6Ethical Consideration

Ethical reviewing and approval for this study was taken by the Health Research Ethics Committee of the AAUP, from the Palestinian MOH and of the hospitals administrators where the study conducted, in addition, the confidentiality of the participants was taken such us no name or personal information were presented in this study.

The approval signed by the nurses applying for the study, and the purpose of the research will be explained to the nurses through a cover letter attached to each questionnaire, and the nurses are given the opportunity to ask questions related to this study, and to stop at any time between or not to answer any questions they were not ready to answer. The participants will be fully explained that they had the right not to participate in this study, the nurse's confidentiality was guaranteed and their identity was not revealed during the study.

The nurse's data will be secured and saved to the researcher password-protected personal computer, and the printed version materials from the study were stored in a locked cabinet in a closed office. Only the researcher has access to the study data. The anonymity of the nurse was preserved while collecting data, with the participants' names not recorded in the answer sheets

3.7 Instrument

The knowledge and practice survey are a quantitative method which provides access to qualitative and quantitative information. In our study we used a questioner that consisted of 3 sections to assess the knowledge and practice among emergency nurses in Hebron hospitals in English language. The knowledge and practice tool in our study were adopted from similar literatures, WHO guidelines and Ethiopian Pediatric Association Guideline & Training manual. It should be noted that the reliability and validity of the tool were 0.89.

The data collection instrument included three sections: First section is demographic data which include two parts: providers characteristics (age, gender, training) and Institutional characteristics (availability of neonatal resuscitation guidelines, availability of supportive supervision, availability of neonatal resuscitation equipment's), second section is knowledge assessment questions and third section is Practice Assessment questions.

Knowledge section included 20 multiple choice questions related to neonatal resuscitation and each question had four possible options. Knowledge questions were scored either 1 or 0 for the correct and incorrect response, respectively. Nurses who scored above 80% were considered having good knowledge and who scored less than 80% were considered having

poor knowledge, which have been used in different studies (Murila et al., 2012) (Gebreegziabher et al., 2014) (Abrha et al., 2019).

Practice section included 5 sections each section included 5 Done\Not Done questions. Practice questions were scored either 1 or 0 for the Done and not Done response, respectively. Nurses who scored above 80%were considered having good practice and who scored less than 80% were considered having poor practice, which have been used in different studies (Gebreegziabher et al., 2014).

3.8 Pilot Study

The experimental study was conducted survey the obstacles that we may face through data collection. It evaluated the clarity, applicability, and suitability for nurses. The pilot study was aimed at assessing the time required to complete the questionnaires that were estimated in 10-15 minutes, feedback on language, word choice, organizing questionnaires were obtained from the participants, and adjustments were made accordingly.

The pilot study was conducted on the nurses who work in the Emergency departments in selected hospitals before the main study was performed. The data obtained from the pilot study was conducted to calculate the internal consistency reliability coefficient for the scales in English for the purpose of this study. Participants who participated in the pilot study were excluded from actual data collection.

3.9Data Analysis

The data was entered using a restricted data Excel file, then exported to SPSS version 25 software, then cleaned and the variables were defined and labeled. Based on a scoring guide the knowledge questions were recorded into 0, or 1, where the respondent was scored by 1

if his answer was true, and was scored by 0 if his answer was false, then the knowledge score was computed by summing the scores of the 20 questions, then the score of 20 was transformed to score of 100. The practice questions were recorded into 0, 1, where the respondent who performed the practice was scored by 1, and the one who didn't was scored by 0, then the practice score was computed by summing the score of 30 practice items, then the score of 30 was converted to a score of 100.

The level of knowledge and the level of practice was defined as poor if the score <80, good if the score>=80.A set of descriptive and inferential statistics were conducted according to the study objectives where the scale variables (knowledge score, practice score, age) were describes by means, std. deviation, minimum, maximum, while the categorical variables (knowledge level, practice level, socio-demographic variables, institutional variables, the participants responses regard knowledge and practice) were describes by frequencies and percentages. The relationships between knowledge score, practice score and each of institutional and socio-demographic variables using 2-independent samples test for dichotomous independent variables and one-way ANOVA for polytomous independent variables, then multiple comparisons using (LSD) was conducted when needed.

Research questions and the statistical test

Research Question	**Statistical Test**
What is the relationship between demographic data and knowledge & practice of emergency nurses toward neonatal resuscitation in Hebron hospitals?	T test, ANOVA
What is the level of knowledge of emergency nurses toward neonatal resuscitation in Hebron hospitals?	Descriptive statistics
What is the level of practice of emergency nurses toward neonatal resuscitation in Hebron hospitals?	Descriptive statistics

3.10 summary

In this chapter, the methods and procedures used for this study were described. The specific variables examined were relationship between level of knowledge & practice regarding neonatal resuscitation and neonatal mortality rate. A descriptive cross-sectional study design was used with an anticipated sample size of approximately 151 participants. Data was collected using a questionnaire was derived from a pre-formatted questionnaire, derived from similar literature, WHO guidelines, and the Ethiopian Association for Children and Pediatrics guidelines. Data was analyzed with descriptive statistics at the Level of significance ($\alpha = 0.05$), 95 % confidence level ($Z = 1.96$) and error proportion ($d = 0.05$).

Chapter Four

Study Results

4.1Introduction

This study was conducted with the aim of assessment of knowledge and practice among nurses toward neonatal resuscitation in Hebron hospital. Specifically, in this chapter we have found the answers to the questions that were mentioned in the first chapter, which are "What is the relationship between demographic data and knowledge & practice of nurses toward neonatal resuscitation in Hebron hospitals?"," What is the level of knowledge of nurses toward neonatal resuscitation in Hebron hospitals?" and "What is the level of practice of nurses toward neonatal resuscitation in Hebron hospitals?''

4.2Reliability

The reliability of the tool was checked by the author of the used tool based on the analysis result of the pretest which was 0.89 (Cronbach's alpha=0.89), in this study a double check was performed to examined the reliability of the used tools, Cronbach's Alpha was computed, as seen below it was 0.731 which reflects an acceptable level of internal consistency.

4.3Descriptive Analysis

4.3.1Provider sociodemographic and institutional characteristics.

A total of 151 participants were of the study with a response rate of 100%. The maximum and minimum age of the participant were 44 and 21 years respectively. While the mean age of the participants was 29.08 (SD=5.48). Majorities of the participants 94 (62.3%) aged between (20-29(years and 111 (73.5%) were males.

Regarding to educational level majorities of the participants 105(69.5%) were degree holders. Also, (71.5%) of the participants confirmed that they received resuscitation in their workplaces. (52.3%) of the participants worked at the public hospitals while (28.5%) in the referral hospitals and (19.2%) in the private hospitals.

(87.4%) of the participants confirmed the availability of fully equipped with resuscitation material such as: (Radiant warmer, bag with mask, suction machine & catheter, single/multi use suction bulb, stethoscope) whereas more than the half of them (59.6%) reported that there is a resuscitation guideline in their workplaces.

With regard to providing the participant with supportive supervision, (69.5%) of them reported its presence and (30.5%) reported its absence as shown in Table 1.

Table1: Provider sociodemographic and institutional characteristics (N=151)

Variables	Categories	Frequency (N)	Percentage (%)
Age	Mean=29.08±5.48 Range= (21-44)		
Age categories in Years	(20-29)	94	62.3
	(30-39)	51	33.8
	(40 and above)	6	4.0
Gender	Male	111	73.5
	Female	40	26.5
Educational level	Diploma	25	16.6
	Bachelor	105	69.5
	Master and higher	21	13.9
Resuscitation Training	Yes	108	71.5
	No	40	26.5
Type of hospital	Private hospital	29	19.2
	Referral hospital	43	28.5
	Public hospital	79	52.3
Full resuscitation Material	Yes	132	87.4
	No	19	12.6
Resuscitation Guideline	Yes	90	59.6
	No	61	40.4
Supportive supervision	Yes	105	69.5
	No	46	30.5

4.3.2The level of Knowledge of the participant towards neonatal resuscitation

This study had showed that the majorities of the participants 137(90.7%) had poor knowledge score towards neonatal resuscitations while only 14(9.3) had a good knowledge (Figure 1). Overall mean of knowledge was answering 9.62 correct questions out of 20 questions which was poor. The minimum and maximum knowledge scores of the participants towards neonatal resuscitation were 1(5%) and 19(95%) respectively as shown in table (2).

Table (3) and Figure (2) shown that the most frequent question which answered correctly was “To which new born does initial assessment is required”? represented by 78.1% followed by “What is preferred medication during resuscitation” and “During resuscitation of the

neonate by bag and mask, the mask should cover"? represented by (76.8%, 72.8%) respectively.

On the other hand, the most frequent question which answered incorrectly was "When do you stop the initial steps of resuscitation"? represented by (86.1%) followed by "When do you start Bag and mask ventilation"? and "What are the reasons for failure of bag & mask ventilation"? represented by 76.8% for each question.

Table (2): Descriptive Statistics of the level of knowledge toward neonatal resuscitation

	N	Minimum	Maximum	Mean	Std. Deviation
Total level of knowledge	151	1.00	19.00	9.6291	3.82556
Percentage of score of knowledge	151	5.00	95.00	48.1457	19.12778
Valid N (listwise)	151				

Knowledge categories

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	14	9.3	9.3	9.3
	Poor	137	90.7	90.7	100.0
	Total	151	100.0	100.0	

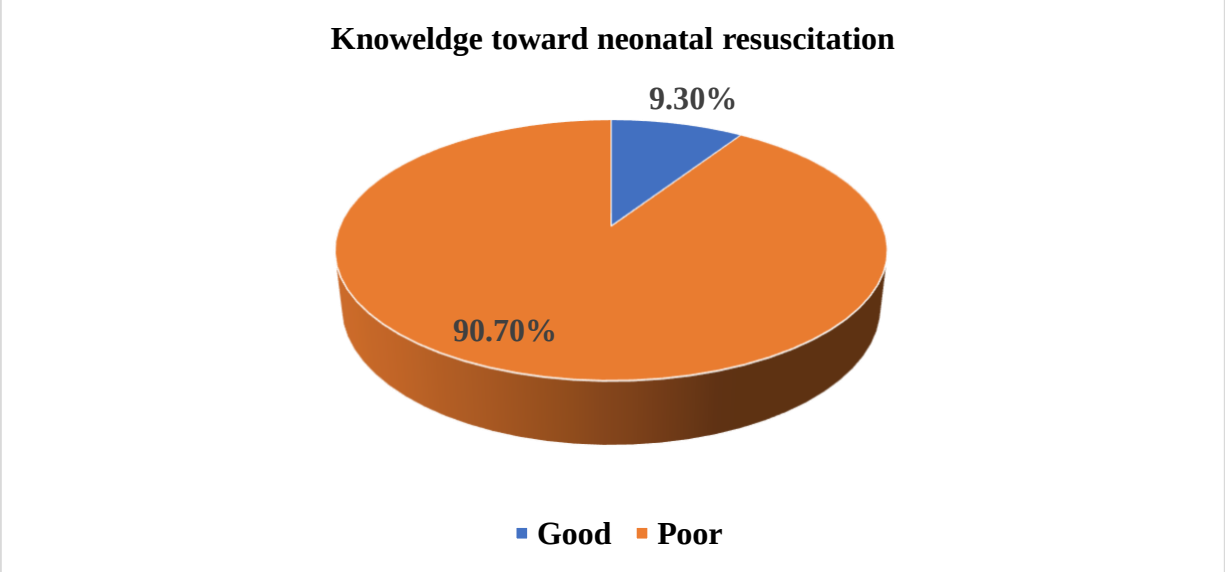


Figure (1): Knowledge toward neonatal resuscitation

Table (3): Distribution of answers toward neonatal resuscitation knowledge questions

Items related to the level of knowledge toward neonatal resuscitation	Correct answers		Incorrect answers	
	N	%	N	%
1. When you should be prepared to resuscitate the new born?	97	64.2	54	35.8
2. To which new born does initial assessment is required?	118	78.1	33	21.9
3. What are the correct methods of stimulating the new born?	73	48.3	78	51.7
4. How much time is allotted for the initial steps of resuscitation?	102	67.5	49	32.5
5. When do you stop the initial steps of resuscitation?	21	13.9	130	86.1
6. When do you start Bag and mask ventilation?	35	23.2	116	76.8
7. What are the reasons for failure of bag & mask ventilation?	35	23.2	116	76.8
8. What is the correct position of baby's neck for resuscitation?	86	57.0	65	43.0
9. Which mask size is appropriate for resuscitations of term & preterm babies respectively?	84	55.6	67	44.4
10. During resuscitation of the neonate by bag and mask, the mask should cover?	110	72.8	41	27.2
11. What are the indications to start chest compressions during neonatal resuscitations?	91	60.3	60	39.7
12. Which technique of chest compression is recommended during neonatal resuscitation?	80	53.0	71	47.0
13. What is the recommended ratio of chest compression to ventilation?	81	53.6	70	46.4
14. For how long does cardio-pulmonary resuscitation (CPR) continued before reassessing heartbeat?	47	31.1	104	68.9
15. What depth of chest compression you provide to produce the required pressure?	78	51.7	73	48.3
16. What are the indications to start medications during neonatal resuscitations?	104	68.9	47	31.1
17. What is preferred medication during resuscitation?	116	76.8	35	23.2
18. When does volume expander indicated during neonatal resuscitation?	56	37.1	95	62.9
19. What is the preferred volume expander during resuscitation?	37	24.5	114	75.5
20. After how many seconds you assess for the effects of epinephrine?	56	37.1	95	62.9

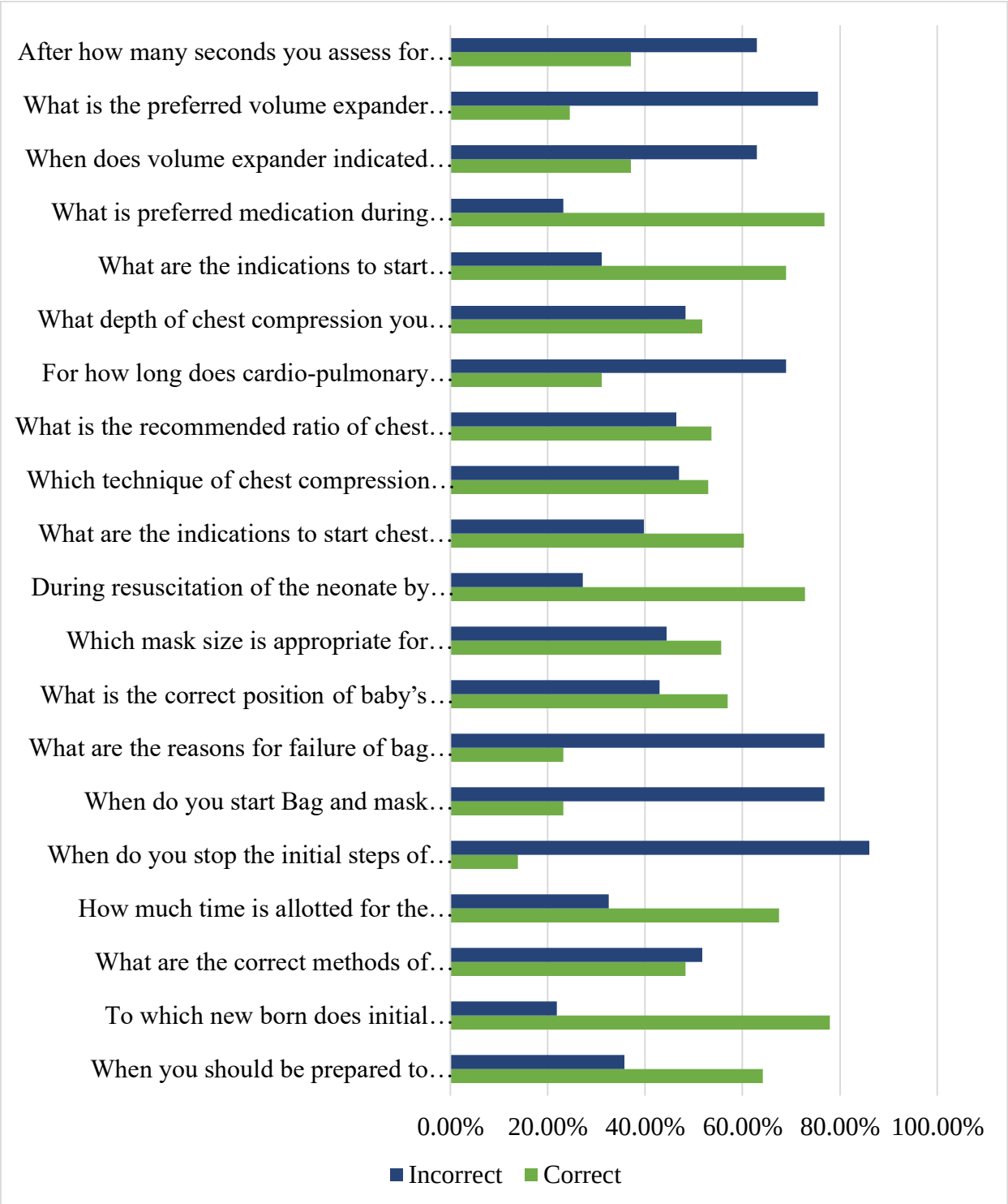


Figure (2):Distribution of answers toward neonatal resuscitation knowledge questions

4.3.3Practice of the participant toward neonatal resuscitation

This study had revealed that majority 68.9% of the participants had good practice toward neonatal resuscitation and the rest (31.1%) had poor practice toward neonatal resuscitation (Figure 3). The overall practice scored (84.76%). The minimum and maximum practice score of the participants about neonatal resuscitation were9(36%) and 25(100%) respectively as shown in table (4).

Table (5) shown that the most frequent items which completely done were "Assess the need for ventilations and "Assess the response of the new born in chest compression" which represented by 93.4% for each item. On the other hand, the most frequent items which not done were "Tell the mother what is going to be done during resuscitation preparation represented by (27.4%) followed by" Provide continual emotional support in the resuscitation preparation phase represented by (24%).

For each section, the total practice for the prepare for resuscitations, actions toward new born is not breathing, providing bag and mask ventilation, chest compression and given medication or volume expander were (81.4%, 84.2%, 86.2%, 87.8%, 83.6%) respectively as shown in figure (4).

Table (4): Descriptive Statistics of the level of practice toward neonatal resuscitation

	N	Minimum	Maximum	Mean	Std. Deviation
Practice. Total	151	9.00	25.00	21.1921	3.69994
Practice. Percentage	151	36.00	100.00	84.7682	14.79975

Practice. Categories					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	104	68.9	68.9	68.9
	Poor	47	31.1	31.1	100.0
	Total	151	100.0	100.0	

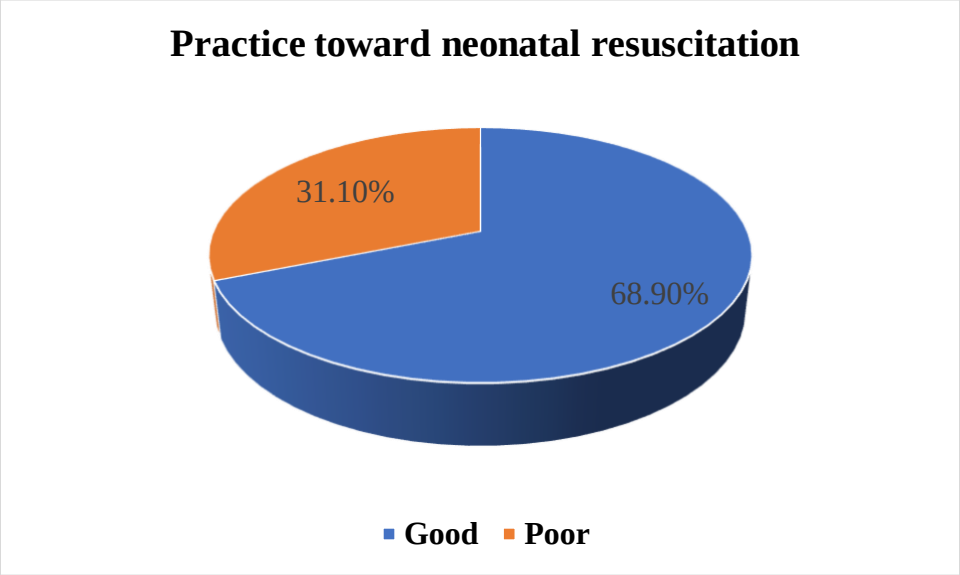


Figure (3): Practice toward neonatal resuscitation

Table (5): Distribution of respondent's neonatal resuscitation practice items(N=151)

Items related to practice toward neonatal resuscitation	Done		Not Done	
	N	%	N	%
Prepare for resuscitations				
Wash Hands	127	84.1	24	15.9
Tell the mother what is going to be done.	109	72.2	42	27.8
Collect the necessary materials.	135	89.4	16	10.6
Check functionally of the equipment	131	86.8	20	13.2
Provide continual emotional support	114	75.5	37	24.5
Total	81.4%±24%			
Actions toward new born is not breathing				
Dry the new born	127	84.1	24	15.9
Position the new born	133	88.1	18	11.9
Maintain thermo-regulations.	113	74.8	38	25.2
Provide tactile stimulation.	126	83.4	25	16.6
Clear the air way.	138	91.4	13	8.6
Total	84.2%±20%			
Providing bag and mask ventilation				
Assess the need for ventilations	141	93.4	10	6.6
Place the baby faces up on flat surface with neck slightly extended	121	80.1	30	19.9
Place the mask on the face so that it covers nose, mouth and tip of chin.	132	87.4	19	12.6
Check the rise of chest with 2-3 ventilation	125	82.8	26	17.2
Ventilate 40-60breath/minute	132	87.4	19	12.6
Total	86.2%±19.2%			
Chest compression				
Assess the need for chest compression	138	91.4	13	8.6
Select the correct site for chest compression	134	88.7	17	11.3
Provides back support throughout.	115	76.2	36	23.8
Apply chest compression	136	90.1	15	9.9
Assess the response of the new born.	141	93.4	10	6.6
Total	87.8%±20.4%			
Given medication or volume expander				
Calculate the correct dose of medications	120	79.5	31	20.5
Choose the correct size of syringe	120	79.5	31	20.5
Draw the correct dose of the drug.	137	90.7	14	9.3
Administer the correct dose of drug.	126	83.4	25	16.6
Check heart rate after 30 sec. and repeat as needed.	129	85.4	22	14.6
Total	83.6%±23.2%			
Overall Practice Score	84.76% ± 14.79%			

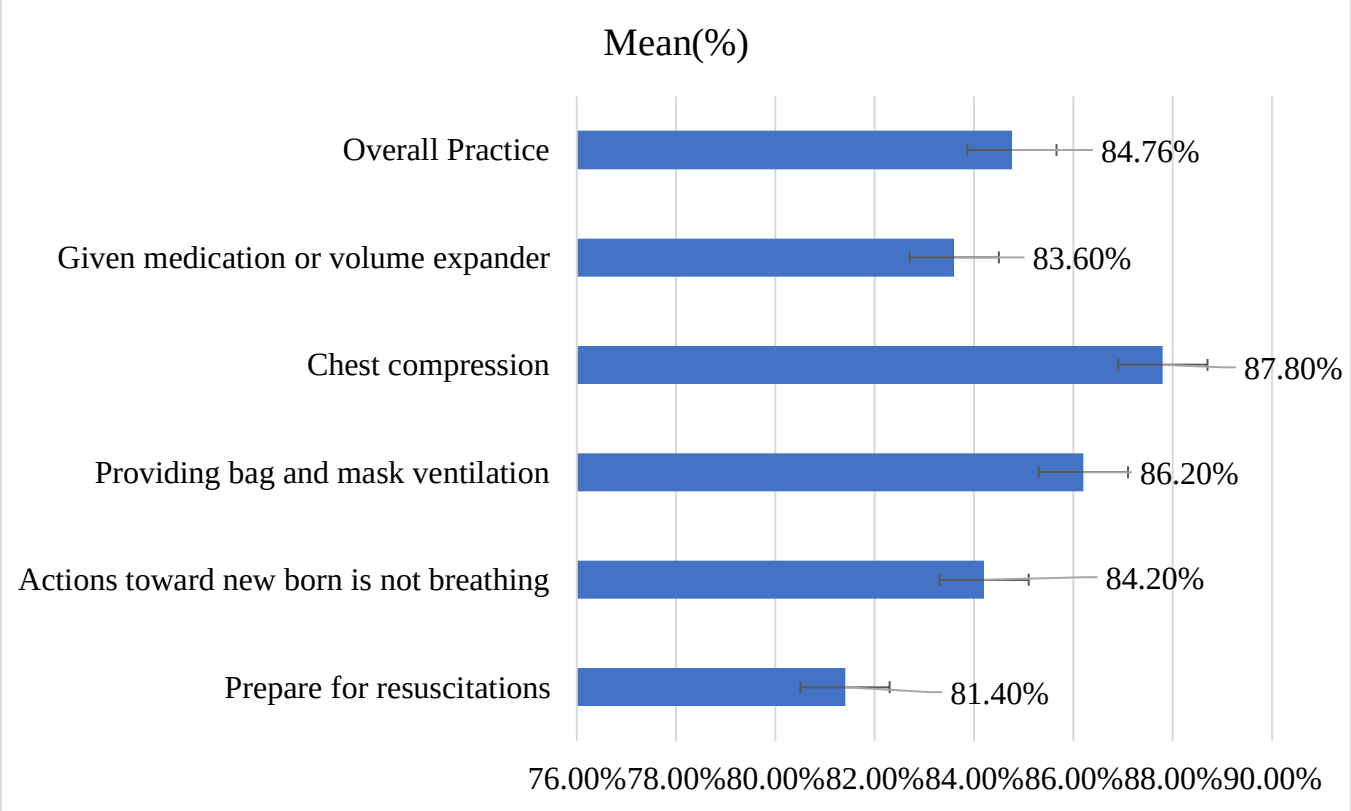


Figure (4): Mean Practice (%) toward neonatal resuscitation

4.4 Inferential Analysis

For testing the hypothesis which stated that "There is no statistically significant difference of emergency nurses' characteristics (age, Gender, level of education, training) and institutional characteristics (hospital level, availability of resuscitation equipment, availability of resuscitation guideline, supportive supervision and work load) at ($\alpha \leq 0.05$) on their level of knowledge and practice toward neonatal resuscitation.

4.4.1Factors affecting the level of knowledge and the level of practice of the participants

Table (6) revealed that there is no statistically significant difference between the level of knowledge and the provider characteristics except the age (P.value=0.001) as the highest mean percentage of knowledge was among who aged 40 and above as they scored (58.33%).

Also, there is no statistically significant difference between the level of knowledge and the institutional characteristics except availability of supportive supervision (P.value=0.007).

For determine the source of difference according to the age, post hoc test was used (Tukey test) as shown in table (7), as it's revealed that there is a statistically significant difference between the participant who aged between (20-29) and (30-39) years as who more than 29 scored higher score than who aged between (20-29).

On the other hand, table (8) revealed that the results of examining the significance of the differences in practices level in terms of selected institutional characteristics. At 5% level of significance, there was no sufficient evidences that there is a significant relationship between practices score and each of, "level of hospital", "equipment". But it showed that there was statistically significant difference between the level of Practice and availability of guidelines (P.value =.028) and availability of supervision (P.value =.000)

Also, it revealed that there is no statistically significant difference in the level of practice according to the provider characteristics except resuscitation training (P.value=0.011).

Table (6): Factors affecting the level of knowledge of the participants

Variables	Categories	Mean (%)	SD (%)	T/F value	P. Value	Test Used
Provider Characteristics						
Age	R=0.47				0.001*	Bivariate correlation
Age categories in Years	(20-29)	43.56	17.89	7.868	0.001*	One Way-ANOVA
	(30-39)	55.39	18.99			
	(40 and above)	58.33	18.88			
Gender	Male	49.45	18.15	1.41	0.16	Independent T-Test
	Female	44.50	21.41			
Educational level	Diploma	51.80	23.49	1.87	0.15	One Way-ANOVA
	Bachelor	46.19	17.34			
	Master and higher	53.57	21.22			
Resuscitation Training	Yes	48.37	19.53	-0.10	0.91	Independent T-Test
	No	48.75	17.78			
Institutional Characteristics						
Type of hospital	Private hospital	45.34	19.86	1.04	0.35	One Way-ANOVA
	Referral hospital	51.51	21.67			
	Public hospital	47.34	17.29			
Full resuscitation Material	Yes	49.24	19.19	1.63	0.10	Independent T-Test
	No	40.93	18.72			
Resuscitation Guideline	Yes	48.66	19.26	0.18	0.85	Independent T-Test
	No	48.05	18.61			
Supportive supervision	Yes	48.80	18.62	0.29	0.007	Independent T-Test
	No	44.79	19.94			

*Statistically significant difference at $\alpha \leq 0.05$

Table (7): Multiple Comparisons of Post Hoc Test
Tukey HSD

(I) age	(J) age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
(20-29)	(30-39)	-11.82833*	3.18401	.001	-19.3666	-4.2901
	(40 and above)	-14.76950	7.70902	.138	-33.0208	3.4818
(30-39)	(20-29)	11.82833*	3.18401	.001	4.2901	19.3666
	(40 and above)	-2.94118	7.90161	.927	-21.6485	15.7661
(40 and above)	(20-29)	14.76950	7.70902	.138	-3.4818	33.0208
	(30-39)	2.94118	7.90161	.927	-15.7661	21.6485

*. The mean difference is significant at the 0.05 level.

Table (8): Factors affecting the level of practice of the participants

Variables	Categories	Mean (%)	SD (%)	T/F value	P. Value	Test Used
Provider Characteristics						
Age	R=0.13				0.10	Bivariate correlation
Age categories in Years	(20-29)	83.74	14.83	0.72	0.48	One Way-ANOVA
	(30-39)	86.11	14.82			
	(40 and above)	89.33	14.67			
Gender	Male	85.22	14.35	0.63	0.52	Independent T-Test
	Female	83.50	16.08			
Educational level	Diploma	83.04	14.34	0.81	0.44	One Way-ANOVA
	Bachelor	84.45	14.77			
	Master and higher	88.38	15.58			
Resuscitation Training	Yes	88.44	15.24	0.58	0.011	Independent T-Test
	No	77.22	13.01			
Institutional Characteristics						
Type of hospital	Private hospital	85.24	14.34	1.28	0.28	One Way-ANOVA
	Referral hospital	87.53	12.59			
	Public hospital	83.08	15.96			
Full resuscitation Material	Yes	86.00	14.64	1.95	0.06	Independent T-Test
	No	78.50	12.97			
Resuscitation Guideline	Yes	87.71	15.64	-0.08	.028	Independent T-Test
	No	76.67	13.72			
Supportive supervision	Yes	88.43	15.26	0.27	0.000	Independent T-Test
	No	67.33	13.51			

4.5 Summary

In this chapter, we have found that only 9.3% of participants have good knowledge and about 68.9% have good practice toward neonatal resuscitation. There was no significant relationship between knowledge score and training, availability of neonatal resuscitation guidelines, and availability of resuscitation equipment. But there was a relationship between practice score and training, availability of supportive supervision, and availability of neonatal resuscitation guidelines.

Chapter five

Discussion

5.1 Introduction

Our study aimed assess the level of knowledge and practice among nurses toward neonatal resuscitation in Hebron hospitals. This chapter discusses the relevant descriptive statistical results to explore and identify the relationship between different study variables, also discusses the findings of our study in comparison with related literature. The study variables that we supposed that they have effects on nurse's knowledge and practice toward neonatal resuscitation are: providers characteristics (age, gender, level of education, and training) and institutional characteristics (level of hospital, availability of resuscitation equipment and availability of resuscitation guidelines)

5.2 Discussion about knowledge and practice toward neonatal resuscitation

In our study we found that there was significant association between knowledge score and age of the participants(p=0.001), and no significant association between knowledge level and training (p-value=.91), Gender (p-value=0.16), and Educational level (p- value=0.15). These findings were supported by a study was conducted in Parsa District that showed no significant association between knowledge score training (p-value=0.33) (Gauro et al., 2018).

This study showed that the overall knowledge score of the nurses was poor (<80%). This low level of knowledge may contribute to a weak level of resuscitation for newborns could be due to asphyxia related mortality and morbidity. Thus, training for nurses need to be strengthen. This result is consistent with other studies in Kenya, Baghdad, Parsa District

and Ethiopia (Murila et al., 2012), (Khudhair, 2012), (Gauro et al.,2018) and (Gebreegziabher et al., 2014).

This low level of knowledge among nurses in our study could be due to lack of continuous training, and availability of neonatal guidelines to maintain knowledge of nurses up to date, lack of exposure to real neonatal resuscitation cases during the undergraduate course, lack of certification processes before leaving the university.

From this study it was found that the mean knowledge score of the participants was insufficient (48.1). This finding was in line with the study from Ethiopia (49.3%) but less than study was conducted in India (57%) (Gebreegziabher et al., 2014) & (Subbiah et al., 2012). This inconsistency could be due to the difference in the quality of training on neonatal resuscitation and the guideline available for resuscitation.

This study showed that only 9.3% of the nurses had good knowledge (score greater than 80%) toward neonatal resuscitation. These results were much less than results in a study were conducted in Kenya (only 35.4% score greater than 85%), study from India (only 34% score greater than 85%) (Murila et al., 2012) and (Suresh et al., 2017) The possible explanations could be due to differences in the qualifications of the participants, the study area, and the extent of training undergone by the participants. There might also be variation in the health care systems and policies across the countries.

Also, our study showed 90.7% of nurses had poor knowledge (score less than 80%) toward neonatal resuscitation. These findings were closed to the findings in a study was conducted in Parsa District (93% of respondents had poor score, score less than 85%) (Gauro et al.,

,2018). This low level of knowledge could be due to lack of simulation-based training, updating training and neonatal resuscitation guidelines.

In our study we found that no significant association between practice score and age of the participants(p=0.48), and gender (p-value=0.52), but there was a significant relationship between practice score and training (p-value=0.011) .These findings were supported by a study was conducted in Addis Ababa that showed no significant association between practice score and age, and gender , but there was a significant relationship between practice score and training (two times)(p-value= 0.011) (Bogale, 2017).

In this study the mean practice score of nurses was about (84.7%). This finding was higher than results of a study from Gondar teaching hospital (55.8%) (Gebreegziabher et al.,2014). This inconsistency of performance could be due to differences in quality of training, supportive supervision and neonatal resuscitation guidelines.

This study showed that (68.4%) of the participants had good practice toward neonatal resuscitation. This finding was completely different with that findings in a study from Nigeria only 10% of the nurses had high level of practices (Ezenduka et al., 2016). This discrepancy might be due to the difference in the quality of the training, supportive supervision. This study showed that (31.1%) of the nurses had poor level of practice toward neonatal resuscitation. This finding was less than the result of a study from Iran in which 84.6% of participants had poor skills in neonatal resuscitation (Malekzadeh et al., 2015). This discrepancy between these studies might be due to the difference in the quality of neonatal resuscitation training, adequate exposure to real resuscitation cases

In this study present of neonatal resuscitation guideline (p=0.028) and supportive supervision (p=0.000) were significantly associated with the level of resuscitation performance. This could be because if there is resuscitation guideline in the work place, nurses may adhere to the resuscitation guideline while performing resuscitation which may resulted in good neonatal resuscitation practice and if there were supportive supervision, practice level of nurses improved progressively through time and practice gap decreased unidentified this may have contributed to good neonatal resuscitation practice.

5.3 Conclusion

In conclusion, the overall mean knowledge and practice scores of nurses were inadequate. Only 9.3% and 68.9 % of the respondents had a good level of knowledge and practice toward neonatal resuscitation respectively. Nowadays most hospitals offer resuscitation training programs, supervision and neonatal resuscitation guidelines for their nurses to improve knowledge and practice toward neonatal resuscitation, so this is nurse's responsibility to attend this training programs and to stick with guidelines in order to sure that they give the best quality of resuscitation to neonates.

5.4 Limitation of the study

Firstly, assessment of practice using interview guide rather than observational checklist due to short study period. In addition, knowledge was assessed using self-administered questionnaires which may results in information bias. Secondly, sample size used might not be enough to detect the statistical difference between variables. Finally, limited recourses like literature and protocols and the lack of funds spent on scientific research.

5.5 Recommendation

Based on our findings, we suggest the followings:

- For the Ministry of health and health institutions:

-Ministry of health should provide and initiated long-term training programs to strength neonatal resuscitation among nurses.

-Provide the latest and updated guidelines on neonatal resuscitation to all hospitals in Palestine.

-Ministry of health should promote professional audits for professional conduct and practices. If this is done, nurses would be committed to their job

- For the Hospital managers and decision makers:

-Provide continuous supportive supervision and refreshment training for updating knowledge and practice.

-Provide all equipment and supplies which are important for neonatal resuscitation including resuscitation guidelines.

-Provide continuous and regular training on neonatal resuscitation for nurses.

- Refresh courses on professional skills and practices involving lives should be regularly given to nurses on management of birth asphyxia. This could help reduce complications in birth asphyxia as they could respond more appropriately to such cases timely and aptly

- For researchers:

-conduct many observational studies under this thesis to assess the quality of care, knowledge and practice toward neonatal resuscitation.

-Improve and conduct unified tool with international standards to assess knowledge and practice toward neonatal resuscitation.

- For nurses:

- Update their knowledge and practice toward resuscitation through continuous and regular reading of updated neonatal resuscitation guidelines

-Participate in neonatal resuscitation training regularly and continuously to increase the level of knowledge and practice for them.

-More nurses should be sponsored to specialize in pediatric\neonatal nursing.

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Appendices

Appendix (1): Questionnaire about assessment of knowledge and practice among emergency nurses toward neonatal resuscitation in Hebron hospitals

بسم الله الرحمن الرحيم

أنا الطالب نور الدين جهاد حجازي، طالب ماجستير تمريض الطوارئ في الجامعة العربية الأمريكية. أقوم بعمل بحث علمي كمتطلب لإنهاء الماجستير تحت عنوان:

Assessment of Knowledge and Practice among Emergency Nurses toward Neonatal Resuscitation in Hebron Hospitals

أرجو من حضرتكم التكرم بالإجابة عن جميع أسئلة هذا الاستبيان بدقة وموضوعية لغرض انجاح هذا البحث مع تعهدنا لكم بالحفاظ على سرية معلوماتكم وعدم استخدامها إلا لأغراض البحث العلمي المحدد فقط. (يستغرق ملئ الاستبيان من 10-15 دقيقة). وان استلامكم لهذا الاستبيان يعتبر موافقة صريحة للاشتراك في الدراسة.

ملاحظة- يتكون هذا الاستبيان من ثلاثة أقسام

(1) القسم الأول: المعلومات الديموغرافية وينقسم الى جزئين وهما معلومات عن الممرض المشارك ومعلومات حول المستشفى التي يعمل بها الممرض المشارك

(2) القسم الثاني: أسئلة لقياس المعلومات حول إنعاش حديثي الولادة

(3) القسم الثالث: أسئلة لقياس الممارسة حول إنعاش حديثي الولادة

شاكرين لكم حسن تعاونكم

بإشراف: د. محمد الجلاد

Section (1): Demographic Data

Part (1): Provider Characteristics

What is your age in years?
What is your sex? 1- Male 2- Female
What is your level of education? 1- Diploma2- Bachelor 3- Masters 4-Others_____
Have you taken resuscitation training in the work place? 1- Yes 2- No 3-No response.

Part (2): Institutional Characteristics

1-	What level of hospital you are working currently? 1- Private hospital. 2- Referral hospital. 3- General hospital. 4- Others (Specify)	

2-	Does your hospital is fully equipped with resuscitation material? (A minimum of the following materials: Radiant warmer, bag with mask, suction machine & catheter, single/multi use suction bulb, stethoscope).	Yes	No	No response
3-	Does your hospital have neonatal resuscitation guidelines?	Yes	No	No response
4-	Does your hospital provide you supportive supervision?	Yes	No	No response

Section (2): Knowledge Assessing questions

1-	When you should be prepared to resuscitate the new born? 1-At every birth. 2- If we are sure that resuscitation is needed 3- If there is anticipated risk only. 4- Others (specify)
2-	To which new born does initial assessment is required? 1-All new born 2- Only those who had perinatal/Intrapartum risk factor. 3- Preterm fetus only 4- Others (specify) _____
3-	What are the correct methods of stimulating the new born? 1-Slapping/flicking the soles of the feet. 2-Slapping the back. 3-Squeezing the rib cage. 4-Holding upside down and shaking
4-	How much time is allotted for the initial steps of resuscitation? 1-30 sec2- 40 sec. 3-60 sec4- 90 sec.
5-	When do you stop the initial steps of resuscitation? (More than one answers is possible). 1-When baby is cried 2-When breathing rate > 30beat/minute 3-When the bay is gasping 4-When Heart < 60beat/minute.
6-	When do you start Bag and mask ventilation? (More than one answers is possible). 1-Baby is not Breathing or is Gasping 2-Heart rate <100beat 3-Persistent cyanosis 4-Others_____
7-	What are the reasons for failure of bag & mask ventilation? (More than one answers is possible). 1-The seal is inadequate 2-The airway is blocked 3-Inadequate pressure 4-Inappropriate position
8-	What is the correct position of baby's neck for resuscitation? 1-Slightly extended. 2-Flexed. 3-Hyper extended. 4-Others _____
9-	Which mask size is appropriate for resuscitations of term & preterm babies respectively? 1-Size 1 &0 2-Size 2 & 1 3-Size 0 for both 4-Size 1 for both.
10-	During resuscitation of the neonate by bag and mask, the mask should cover? 1-Mouth, nose and tip of chin but not the eye 2-Part of chin, mouth, nose and eyes 3-Part of nose, mouth but not eyes and chin. 4-Parts of mouth, nose & chin but not the eyes

11-	What are the indications to start chest compressions during neonatal resuscitations? 1-HR< 60b/m after bag & mask ventilation 2-HR<100b/m after bag and mask ventilation. 3-Persistent cyanosis after initial resuscitation 4-Apneic after initial resuscitation
12-	Which technique of chest compression is recommended during neonatal resuscitation? 1-Two thumps 2-Two fingers 3-One hand 4-Two hands
13-	What is the recommended ratio of chest compression to ventilation? 1-3:1 2-4:1 3-3:2 4-5:1
14-	For how long does cardio-pulmonary resuscitation (CPR) continued before reassessing heartbeat 1-15 sec 2-20 sec 3-30 sec 4-60 sec.
15-	What depth of chest compression you provide to produce the required pressure? 1-1/3rd of anteroposterior diameter 2-2/3rd of anteroposterior diameter 3-1/4th of anteroposterior diameter 4-3/4th of anteroposterior diameter
16-	What are the indications to start medications during neonatal resuscitations? 1.Heart rate <60 b/m after 30sec ventilation &60sec coordinated chest compression & ventilation. 2.Heart rate <100 with adequate ventilation & chest compression 3.To all new born immediately after birth appearing cyanosed. 4.Others (specify)
17-	What is preferred medication during resuscitation? 1-Epinephrine 2-Naloxone 3-Steroids 4-Other (Specify)_____
18-	When does volume expander indicated during neonatal resuscitation? (More than one answers is possible). 1-If there is sign of shock 2-If there is history of blood loss 3-To all resuscitated babies 4-Other (specify) _____
19-	What is the preferred volume expander during resuscitation? (More than one answers is possible). 1-0.9% NaCl 2-Unmatched type O Rh- packed RBC 3-Ringer lactate 4-Others (specify) _____
20-	After how many seconds you assess for the effects of epinephrine? 1-After 20seconds of epinephrine. 2-After 30seconds of epinephrine. 3-After 40secconds of epinephrine. 4-After 60seconds of epinephrine

Section (3): Practice Assessment

1-In which way you prepare for resuscitations?		
Wash hands	a) Doneb)Not Done	
Tell the mother what is going to be done.	a) Done	b) Not Done
Collect the necessary materials.	a) Done	b) Not Done
Check functionally of the equipment	a) Done	b) Not Done
Provide continual emotional support	a) Done	b) Not Done
2-What do you do initially if the new born is not breathing?		
Dry the new born	a) Done	b) Not Done
Position the new born	a) Done	b) Not Done
Maintain thermo-regulations.	a) Done	b) Not Done
Provide tactile stimulation.	a) Done	b) Not Done
Clear the air way.	a) Done	b) Not Done
3- What do you do to provide bag and mask ventilation?		
Assess the need for ventilations.	a) Done	b) Not Done
Place the baby faces up on flat surface with neck slightly extended	a) Done	b) Not Done
Place the mask on the face so that it covers nose, mouth and tip of chin.	a) Done	b) Not Done
Check the rise of chest with 2-3 ventilation	a) Done	b) Not Done.
Ventilate 40-60breath/minute	a) Done	b) Not Done
4- What do you do to provide chest compression?		
Assess the need for chest compression	a) Done	b) Not Done
Select the correct site for chest compression	a) Done	b) Not Done
Provides back support throughout.	a) Done	b) Not Done
Apply chest compression	a) Done	b) Not Done
Assess the response of the new born.	a) Done	b) Not Done
5- What do you do to give medication or volume expander?		
Calculate the correct dose of medications	a) Done	b) Not Done
Choose the correct size of syringe	a) Done	b) Not Done
Draw the correct dose of the drug.	a) Done	b) Not Done
Administer the correct dose of drug.	a) Done	b) Not Done
Check heart rate after 30 sec. and repeat as needed.	a) Done	b) Not Done

ملخص الرسالة

خلفية الدراسة: تعتبر فترة حديثي الولادة من أخطر المراحل التي يمر بها الانسان، حيث تكون معدلات الوفيات والمرض أعلى مقارنة بمراحل الحياة الأخرى. وعلى مستوى العالم يموت حوالي 2.6 مليون طفل قبل أن يبلغوا شهرهم الأول، ويعد الاختناق أثناء الولادة والولادة المبكرة من المضاعفات والمشاكل التي تتطلب أغلب الأحيان إنعاشا معقدا من قبل أفراد مهرة. لذا فإن المعرفة والممارسة الجيدة والكافية حول إنعاش حديثي الولادة تلعب دورا رئيسيا في التشخيص المبكر والعلاج لتوفير الإنعاش الصحيح لحديثي الولادة ومنع المضاعفات.

الهدف من الدراسة: هدفت هذه الدراسة إلى تحديد مستوى المعرفة والممارسة لدى ممرضي قسم الطوارئ في مستشفيات مدينة الخليل نحو إنعاش حديثي الولادة وهدفت الى دراسة وجود تأثير لبعض العوامل مثل العمر، الجنس، التدريب، المبادئ التوجيهية والاشراف الداعم على مدى ومستوى المعرفة والممارسة اتجاه إنعاش حديثي الولادة.

منهجية الدراسة: تم استخدام الدراسة المقطعية للوصول الى ما تهدف اليه هذه الدراسة، وتتألف هذه الدراسة من 155 ممرض انطبقت عليه شروط الدراسة، وتم جمع البيانات من خلال استبيان ورقي عبء من قبل الممرضين المشاركين. وتم استخدام برنامج الإحصاء (SPSS -25) لتحليل النتائج وكذلك تم استخدام درجة الثقة 95% واعتماد العوامل المؤثرة عند الدلالة الإحصائية إذا كانت أقل من 0.05. وتتكون الاستبيان من ثلاثة أقسام وهي قسم الأسئلة الديموغرافية وقسم الأسئلة التي تقيس مدى معرفة الممرضين اتجاه إنعاش حديثي الولادة والقسم الأخير وهو قسم الأسئلة التي تقيس مدى ومستوى ممارسة ممرضي اقسام الطوارئ في مستشفيات الخليل اتجاه إنعاش حديثي الولادة.

الاعتبارات الأخلاقية: قدمت هذه الدراسة الى لجنة البحث العلمي في والدراسات العليا في الجامعة العربية الأمريكية، وتم أخذ الموافقة من المشاركين وشرح أهداف الدراسة لهم.

النتائج: تم مشاركة 151 ممرض بمعدل استجابة 100%، كان لدى حوالي 9.3% و68.9 من المشاركين معرفة وممارسة جيدة تجاه إنعاش حديثي الولادة على التوالي. كانت هناك علاقة مهمة

بين مستوى المعرفة والعمر حيث كانت القيمة الاحتمالية =0.001وأيضا وجد البحث أن هناك علاقة بين مستوى المعرفة والاشراف الداعم حيث ان القيمة الاحتمالية = 0.007، ولكن لا توجد (القيمة الاحتمالية علاقة بين مستوى المعرفة والجنس (القيمة الاحتمالية =0.16) والتدريب =0.91) والمبادئ التوجيهية (القيمة الاحتمالية =0.85). أما بالنسبة لمستوى الممارسة للممرضين اتجاه إنعاش حديثي الولادة فكان هناك علاقة بين مستوى الممارسة والمبادئ التوجيهية (القيمة الاحتمالية =0.028) والتدريب (القيمة الاحتمالية 0.011)، ووجود الاشراف الداعم (القيمة الاحتمالية = 0.00) ارتبط ارتباطا كبيرا بالأداء الجيد للممرضين.

الخلاصة: في الوقت الحاضر تقدم معظم المستشفيات برامج تدريبية حول إنعاش الأطفال حديثي الولادة والاشراف وارشادات إنعاش الأطفال حديثي الولادة، لذا فإن مسؤولية التمريض هي حضور البرامج التدريبية والالتزام بالقوانين للتأكد من تقديم أفضل جودة من الإنعاش للأطفال حديثي الولادة