Original Article

Effectiveness of Video-Assisted versus Traditional Demonstration Teaching Program on Nurses' Performance regarding Neonatal Cardiopulmonary Resuscitation

Shimaa Ramadan Ahmed[1], Heba Saied El Mahdy[2], Mona Abd Elhaleem Ebraheem Elagamy[3]

[1] Fellow (lecturer) of Pediatric Nursing, Pediatrics Department, Tanta University Hospitals, Tanta University, Egypt

[2] Professor of Pediatrics, Faculty of Medicine, Tanta University, Egypt

[3] Assistant Prof. of Maternal and Neonatal Health Nursing, Faculty of Nursing, Tanta University, Egypt

Abstract

Background: Cardiopulmonary resuscitation is vital procedure to save the lives of newborns in emergency. Video-assisted teaching is crucial for nurses to master neonatal resuscitation skills. **Aim of the study** was to evaluate the effectiveness of video-assisted versus traditional demonstration teaching program on nurses' performance regarding cardiopulmonary neonatal resuscitation. **Design:** A quasi-experimental research design was applied. **Setting:** The study was done at Neonatal Intensive Care Unit of Tanta Main University Hospitals **Subjects:** A purposive sampling of 50 nurses from the setting described above. They were divided into 2 equal groups; group (1) received traditional demonstration method and group (2) received video- assisted teaching method. **Tools of data collection:** Two tools were utilized **Tool I:** Nurses' self-administered questionnaire sheet regarding cardiopulmonary neonatal resuscitation **Tool II:** Nurses' observational checklist about cardiopulmonary neonatal resuscitation. **Results:** Statistically significant differences were observed among nurses of group (1) and among nurses of group (2) concerning total score of knowledge and practice before and immediately after teaching intervention. Also, statistically significant differences were found concerning the level of total knowledge scores and total practice scores between nurses of both groups immediately post teaching program. **Conclusion:** Both nurses in the two groups demonstrated improved levels of knowledge and practice immediately post-program compared to pre-program. However, group (2) exhibited significantly greater progress than group (1), reflecting the high positive effect of the video-assisted teaching method. **Recommendations:** Encourage using of video-assisted teaching method for nurses working at neonatal intensive care unit to improve their performance and achieve better teaching outcomes.

Keywords: Cardiopulmonary Neonatal Resuscitation, Nurses' Performance, Teaching Program, Traditional Demonstration, Video-Assisted.

Introduction

Over 2.5 million newborns worldwide pass away during the neonatal era; the majority of these deaths can be avoided with the implementation of efficient interventions throughout the entire spectrum of care, including prenatal, intra-partum, postpartum, and delivery. Newborn mortality is foremost in the first 24 hours of life, when about 36 percent of deaths take place. Intra-partum events (previous birth asphyxia), infections, and hazards from preterm birth are the most common causes of neonatal death. What occurs soon following birth can have an impact on the rest of an individual's life. Since 5–10% of newborns are unable to start and maintain normal breathing at birth, positive pressure ventilation (PPV) is the most significant aspect of

resuscitation for newborns. Helping newborns breathe is one way that neonatal resuscitation programs (NRPs) can lower early neonatal mortality and stillbirths associated to intra-partum (**Holm et al., 2024).**

Based on the most recent scientific data, the American Academy of Pediatrics jointly with the American Heart Association created the Neonatal Resuscitation Program with the intention of having a trained professional available at every delivery (**Wyckoff et al., 2021**). Neonatal resuscitation is a medical crisis wherein healthcare providers follow a set of guidelines for vital measures to assist a newborn in making its transition from fetal to extra uterine life. In frequently hectic settings, physicians must quickly evaluate the neonate's condition, check physiological data, as well as communicate successfully; this complexity can occasionally lead to mistakes and departures from the recommended guidelines (**Weimar et al., 2024).**

Newborn resuscitation is the process of restoring and maintaining breathing and circulation for a newborn whose heart has stopped or whose breathing has stopped. Resuscitation of neonates requires different knowledge, skills, talents, and actions than resuscitation required for pediatric. Such as, in neonatal resuscitation, the chest compression-ventilation ratio should be 3:1; however, in pediatric age groups, it should be 30:2 for lone-rescuer cardiopulmonary resuscitation or 15:2 for two-rescuer cardiopulmonary resuscitation. In addition, an entire team of health care workers with distinct tasks carry out newborn resuscitation (**Johnson et al., 2020).**

Nurses should be knowledgeable and skilled in neonatal resuscitation because they make up the biggest group of healthcare professionals directly involved in providing care for newborns (**Budhathokietal., 2021; Kariuki et al., 2021**). Nurses are frequently taught through lectures, demonstrations, video-assisted education, and other methods of teaching (**Awad, 2018).**

Through demonstration and re-demonstration-based learning, nurses can refine and practice their skill sets in a secure setting. Rather of endangering actual pediatric patients, they can make mistakes and benefit from them. This helps learners become more confident and better equipped for real-life scenarios, in addition to improving their clinical skills (**Chernikova et al., 2020**).

Technology integration in video-assisted instructional techniques creates many opportunities to research novel approaches to awareness-raising. Additionally, it makes it easier to develop pertinent knowledge and competencies for dealing with life-threatening events. Healthcare quality would improve if staff nurses were trained using video education, which would enable them to enhance and refine their current knowledge and abilities (**Mahmoud et al., 2022).**

Neonatal resuscitation video-assisted teaching is a training method in which nurses watch, record, and discuss resuscitations. Nurses can witness their own performances, and other times they see resuscitations that were purposefully chosen and in which they may not have taken part. This procedure exposes nurses to a wider variety of clinical scenarios and allows deep thinking (**Weimar et al., 2024).**

Through the use of speech, sight, and motion, the instructional video technique enables nurses to learn more efficiently by providing clear explanations of complex procedures and subjects. Additionally, Instructional concepts may be sent in a way that cannot be adequately described verbally **(Devi et al., 2019).** Using video helps nurses become more confident and better equipped for real-life situations while also enhancing their clinical skills. Therefore, in clinical settings, nurse educators can teach a procedure or practice using a range of teaching-learning approaches and styles **(Chernikova, 2020).**

Significance of the Study:

Neonatal resuscitation is a lifesaving technique aimed at securing newborns who are unable to breathe independently at birth and assists ventilation once breathing is achieved **(Shukla et al., 2022)**. Internationally 2.3 million children died in the first month of life in 2022. There are approximately 6500 newborn deaths per day, an estimated 2.5 million newborns died in the first 28 days of life in 2019, or around 6700 daily, with an average of 17 deaths per 1000 live births **(World Health Organization, 2020)**. More than 1600 neonate deaths every day worldwide are due to birth asphyxia or intrapartum hypoxia-ischemia, representing approximately twenty-five percent of all newborn deaths annually. **(World Health Organization, 2024)**.

In order to ensure a healthy transition in life, all newborns must receive high-quality intrapartum care and resuscitation. More trained personnel including nurses and doctors should be employed and the necessary equipment should be prepared if resuscitation is anticipated. **(Kariuki et al., 2021).**

Nurses are frequently taught through lectures, demonstrations, video-assisted education, and other methods of teaching. These days, nurses utilize modern technologies like computers and video recordings extensively since they offer them new learning possibilities and the capacity to repeat particular parts or the entire film multiple times **(Awad, 2018).**

Additionally, the teaching video format enhances nurses' learning since it may provide straightforward, simple explanations of complex operations' concerns and themes using sound and actions. Furthermore, it may impart educational messages in a manner that cannot be expressed through verbal explanation alone. According to the aforementioned, video-assisted instruction appears to be more popular and has become one of the most successful teaching strategies **(Devi et al., 2019)**.

Aim of the study: was to evaluate the effectiveness of video-assisted versus traditional demonstration teaching program on nurses' performance regarding cardiopulmonary neonatal resuscitation.

Research Hypotheses:

H1: Nurses' knowledge and practices are expected to be improved after receiving teaching program about cardiopulmonary neonatal resuscitation using traditional demonstration method.

H2: Nurses' knowledge and practices are expected to be improved after receiving teaching program about cardiopulmonary neonatal resuscitation using video-assisted teaching method.

H3: Video-assisted teaching method is expected to be more effective than traditional demonstration method in improving nurses' knowledge and practices about cardiopulmonary neonatal resuscitation.

Subject and Method:

Research Design:

A quasi-experimental research design was utilized to accomplish the aim of this study

Setting:

The study was carried out at Neonatal Intensive Care Unit (NICU) of Tanta Main University Hospital which is affiliated to Ministry of Higher Education and Scientific Research.

Subjects:

A purposive sampling of 50 nurses (using criterion sampling technique) was collected from the setting described above.

Inclusion criteria:

▪ Nurses who aged 20-50 years.

▪ Neonatal nurses who had at least 9 months of experience at NICU.

▪ Neonatal nurses who dealt with and cared for the neonates only.

Nurses were split up into two equal groups using stratified random selection:

• **Group (1):** Comprised of 25 nurses who received teaching program about cardiopulmonary neonatal resuscitation using the traditional demonstration method.

• **Group (2):** Comprised of 25 nurses who received teaching program about cardiopulmonary neonatal resuscitation using video-assisted teaching method.

Tools of data collection:

This current study utilized two tools for data collection. They were developed on the basis of recent literatures.

Tool I: Nurses self-administered questionnaire sheet regarding neonatal resuscitation:

It was constructed by the researchers following examining latest and most current pertinent literatures. It was produced in an Arabic language to suit all the educational levels of the studied nurses. It was filled by the studied nurses themselves and divided into 2 parts:

Part (1): Socio-demographic characteristics of nurses that involved:

Age, gender, educational degree, years of NICU experience, previous training on neonatal resuscitation program and place of residence.

Part (2): Nurses' knowledge regarding cardiopulmonary neonatal resuscitation:

This part dedicated to assess nurses' knowledge about neonatal resuscitation: (**American Academy of Pediatrics& American Heart Association; 2021; Holm et al., 2024**; **Wyckoff et al., 2021**; **Weimar et al., 2024**)

- It included (60 multiple choice questions) that covered items including: definition and the primary importance of neonatal resuscitation program, foundations of neonatal resuscitation, anticipating and preparing for resuscitation, risk factors of neonatal resuscitation, neonatal resuscitation algorithm including initial steps of newborn care, pulse oximetry using, administering continuous

positive airway pressure (CPAP) during the initial stabilization period, positive-pressure ventilation, the ventilation corrective steps (MRSOPA that refers to: **M**ask adjustment, **R**eposition the head and neck, **S**uction the mouth and nose, **O**pen the mouth, **P**ressure increase and **A**lternative airway), endotracheal intubation and laryngeal mask, chest compressions, medications (Epinephrine administration) of advanced resuscitation, umbilical vein catheter and intraosseous needle insertion, volume expander, resuscitation and stabilization of pre-term newborn, post-resuscitation care, special considerations, ethics alongside care at the end of life.

Scoring system: Nurses' knowledge was scored as follows:

- Right response received a score of (1).
- The incorrect response or ignorance received a score of zero.

Nurses' knowledge total scores were divided into the following categories:

- Low-level knowledge (Less than 70% of total score)
- Moderate-level knowledge (70– ↓80% of total score)
- High-level knowledge (80–100% of total score)

Tool II: Nurses' observational checklist about cardiopulmonary neonatal resuscitation: that included Neonatal Resuscitation Program Quick Equipment Checklist and Critical Performance Steps of Neonatal Resuscitation Program**,** they were adopted from (**American Academy of Pediatrics& American Heart Association; 2021**)**.** These checklists were used to assess nurses' practices regarding neonatal resuscitation.

The nurses' practices were graded as follows:

- Done was scored one.

- Incomplete or not done was scored zero.
- **The following categories were utilized to group the total nurses' practices scores:**
- Less than 80% was considered unsatisfactory practice
- From 80% and more was considered satisfactory practice

Method:

1- **Administrative process:** An official approval was acquired from the Pediatric Hospital's director& Head of Neonatal Intensive Care Unit at Tanta University Hospitals for carrying out the current study.

2- **Meeting with nurses**: was put into place before the data gathering step started in order to build a good rapport, verify the research's viability, as well as provide a succinct description of the study's purpose.

3-**Ethical and legal considerations:**

a- Ethical approval was gained from the ethical committee of Scientific Research members at Tanta University's Faculty of Nursing before carrying out the study with code No. (687-5-2025)

b- Nature of the study did not cause any pain or harm to the participants

C- Privacy in addition to confidentiality in relation to the data gathering was taken into account.

d- Verbal consent was taken from nurses working in NICU to take part in the study after being informed of its purpose and their freedom to discontinue participation at any moment.

4-**Tools Development**: Two tools were utilized for gathering data; **Tool I:** Nurses' self-administered questionnaire sheet regarding neonatal resuscitation. **Tool II:** Nurses'

observational checklist about neonatal resuscitation.

5- **Content validity**: is submitted to a jury of three pediatric nursing experts to evaluate the tools' usefulness, clarity, as well as content validity. Modifications were made in accordance with their assessment. In the expert's opinion, the questionnaire's face validity was determined to be 98% after determining the content validity of its items.

6-A pilot study: Before initiating collection of data, the tools utilized were subjected to a pre-test in the aforementioned location. To assess the tools' accuracy, utility, and reliability, 10% of the studied subjects (5 nurses) were included in the pilot study. In order to implement the required modifications, the questions were rearranged additionally specific items were restated. Those nurses were excluded from the total sample of the study and replaced by others.

6- **Reliability**: Appropriate statistical test was used to evaluate the tool's internal consistency. Cronbach's alpha test revealed that (tool I) had a reliability of 0.94, tool II had a reliability of 0.92.

Phases of the study: Assessment, planning, implementation and evaluation comprised the teaching program's four phases of the present study.

1- Assessment phase:

The researcher carried out this phase for every research participant for gathering basic data. The researchers explained to nurses the aim and expected outcomes of the study before collecting data. This phase consisted of the following two steps:

-**The first step:** the researchers distributed the questionnaire forms to all nurses of both groups, after explaining its contents to them. Each nurse had been asked to fulfill the questionnaire form on their own in the presence of the researchers to collect baseline data, for assessing nurses who fulfilled the present study's inclusion criteria furthermore to assess the basic nurses' knowledge for the first time to cover (Tool I). Nurses' socio-demographic data, and 60 closed-ended (multiple-choice) questions about neonatal resuscitation (for both groups), were all included in the questionnaire form. Nurses of both groups required nearly 25-30 minutes to respond to this step.

-**The second step**: The researchers assessed nurses' practices for the first time by asking each nurse in both groups to individually demonstrate steps of neonatal resuscitation using CPR manikin. The researchers observed each nurse separately using neonatal resuscitation observational checklist and assigned a score for each step or task prior to conducting the teaching program about neonatal resuscitation in order to complete (Tool II). The typical span of time required for every nurse of each group to fulfill this step was 10-15 minutes.

2- Planning phase:

Following the findings of a requirements analysis and a literatures review, the following were included in the development of the teaching program for nurses: a) Determining explicit objectives for the teaching program. b) Formulating the content that addressed the rationale for implementation of the teaching interventions. c) Video-assisted teaching method, lectures, PowerPoint presentations, CPR manikin, colored booklets, images, demonstrations, and re-demonstrations were among the instructional

techniques and resources that were implemented. Nurses in group (1) received the teaching program using traditional demonstration on the CPR manikin. However, Nurses in group (2) received the teaching program using video-assisted teaching method.

3- Implementation phase:

- The researchers attended in the morning shift, three days per week from 9:00 am to 1:00 pm at Neonatal Intensive Care Unit of Tanta University Main Hospital to collect the data for the pretest, teaching program conduction, and immediate posttest.

- The nurses in each group were classified into 5 sub-groups and each group involved five nurses.

- Before conducting the teaching program, the researchers performed a pretest by interviewing the participated nurses who fulfilled the inclusive criterion one at a time as well as obtaining their verbal consent. This was done for collecting baseline data and assessing the basic nurses' knowledge and practices about cardiopulmonary neonatal resuscitation in both groups.

-Then, The teaching program was undertaken for nurses in both groups. In accordance with the nurses' actual needs assessment, the teaching program was done over the course of six sessions containing the study objectives.

- **For group (1):** In each traditional demonstration teaching session, nurses were divided into five groups of five nurses. The researchers explained the teaching program about cardiopulmonary neonatal resuscitation using traditional demonstration, re-demonstration method on CPR manikin, traditional lecture, PowerPoint presentations, and images. The teaching program

consisted of six sessions (three sessions for the theoretical parts and three sessions for the practical parts using traditional demonstration and red demonstration on CPR manikin). Each session lasted between forty and forty-five minutes, including group discussion based on the progress and feedback of the nurses.

-**The theoretical sessions** focused on knowledge about cardiopulmonary neonatal resuscitation including:

- **The first session:** It concentrated on: **Definitions** (definition of neonatal resuscitation and neonatal resuscitation program (NRP), **The primary importance of neonatal resuscitation program**, **foundations of neonatal resuscitation** (overview and principles of neonatal resuscitation, newborn resuscitation pyramid, NRP key behavioral skills, main cause of neonatal arrest, the transition from fetal to neonatal circulation, clinical findings of Abnormal transition), **Anticipating and preparing for resuscitation** (perinatal risk factors increasing likelihood of neonatal resuscitation, pre birth questions, umbilical cord management plan, assembling the resuscitation team, pre-resuscitation team briefing, assembling and checking resuscitation supplies and equipments), **Neonatal resuscitation algorithm including initial steps of newborn care** (warm, dry, stimulate, reposition head and neck, and suction if needed).

- **The second session:** It emphasized on: **Pulse oximetry (indic**ations of using, **Continuous positive airway pressure (CPAP)** (definition, methods of giving CPAP during the initial stabilization period), **Positive-Pressure**

Ventilation (PPV) (definition, indications, the common terminology used to describe positive-pressure ventilation, types of resuscitation devices used to ventilate newborns, Preparations To begin PPV, evaluating the baby' s response to PPV, The MRSOPA ventilation corrective steps) **Laryngeal mask** (what is a laryngeal mask, how do you insert a laryngeal mask?), **A carbon dioxide detector (**definition, function and types), **Endotracheal intubation** (what is an endotracheal tube, indications, benefits, needed supplies and equipments for insertion, type of endotracheal tube should be used in neonatal resuscitation, preparations for endotracheal tube insertion, how do you confirm that the endotracheal tube is in the trachea?, problems should you consider if a neonate' s condition worsens after endotracheal intubation **).**

▪ **The third session:** It covered the following items: **Chest compressions (**when do you begin chest compressions?, where do you stand to administer chest compressions?, where do you position your hands during chest compressions?, when do you stop chest compressions?, the potential complications of chest compressions), **Medications of advanced resuscitation** (a-Epinephrine: what is epinephrine and what does it do?, when Epinephrine to be given?, Epinephrine preparation and doses, what should you expect to happen after giving epinephrine?, b- Volume expander: indications, types given in neonatal advanced resuscitation, c- Methods of giving medications of advanced resuscitation: Umbilical venous catheter insertion, intraosseous insertion), **Special considerations in resuscitation and stabilization of preterm newborn** (needed additional resources and care for preterm, special precautions after initial stabilization), **Post-resuscitation care** (indications, pot- arrest clinical signs and laboratory findings and management consideration), **Ethics and care at the end of life** (situations in which it is ethical not to initiate resuscitation, how to inform parents that their baby is dying?)

- The researchers continued to reinforce the learned knowledge, responding to any raised questions, and provider, feedback.

- **The practical sessions** focused on clinical practices related to cardiopulmonary neonatal resuscitation through demonstration and re-demonstration on CPR manikin and followed the theoretical sessions. The following items are covered in the practical parts:

▪ **The fourth session:** It concentrated on demonstration and re-demonstration of the following items: **Pulse Oximetry** (how to use pulse oximetry), **Continuous Positive Airway Pressure (CPAP) in the delivery room** (demonstration of CPAP administration as part of delivery room resuscitation**), Positive pressure ventilation (PPV) devices (devices used to give PPV, how to test their efficacy, Positive-pressure ventilation with face mask/free flow oxygen and orogastric tube placement, Positive-pressure ventilation with flow-inflating bag.**

▪ **The fifth session:** It focused on: **The ventilation corrective steps (MR. SOPA), Performing and assisting with endotracheal**

intubation (endotracheal intubation procedure, responsibilities of both the intubator and the assistant, and method of using the tracheal aspirator/meconium aspirator).

▪ <u>**The sixth session:**</u> It emphasized on demonstration and demonstration of the following items: **Cardiac compressions during neonatal resuscitation**, **3x3 method for placing an emergency umbilical venous catheter (UVC)**, **Intraosseous needle insertion** for administering emergency medications and volume expander, **Epinephrine and Volume Expanders** (how to draw up epinephrine and volume expander and administer them through an emergency umbilical venous catheter).

- **For group (2):** In each video- assisted teaching session, nurses were divided into five groups of five nurses. The researchers explained the teaching program about neonatal resuscitation using video- assisted teaching method using the researcher laptop and data show, group discussion, images and colored booklets which were assigned to nurses.

- The teaching program consisted of six sessions (three sessions for the theoretical parts and three sessions for the practical parts). Each session lasted between forty and forty-five minutes, including group discussion based on the progress and feedback of the nurses.

-The theoretical sessions focused on knowledge about cardiopulmonary neonatal resuscitation through using video was adopted from the web site of: <u>https://youtu.be/V3ehCj62wCU?t=11</u>, (which was presented by Dr. Ashraf Mohamed, Pediatrics Department, Faculty of Medicine, Tanta University). The duration of video was

43:20 minutes which was divided according to learning objectives and outlines of each theoretical session.

-The theoretical parts involved the following sessions (3 sessions):

▪ <u>**The first session:**</u> **(from minute 1 to minute 21:40 of the past mentioned video):** It concentrated on: **Definitions** (definition of neonatal resuscitation and neonatal resuscitation program (NRP), **The primary importance of neonatal resuscitation program**, **foundations of neonatal resuscitation** (overview and principles of neonatal resuscitation, newborn resuscitation pyramid, NRP key behavioral skills, main cause of neonatal arrest, the transition from fetal to neonatal circulation, clinical findings of Abnormal transition), **Anticipating and preparing for resuscitation** (perinatal risk factors increasing likelihood of neonatal resuscitation, pre birth questions, umbilical cord management plan, assembling the resuscitation team, pre-resuscitation team briefing, assembling and checking resuscitation supplies and equipments),**Neonatal resuscitation algorithm including initial steps of newborn care** (warm, dry, stimulate, reposition head and neck, and suction if needed).

▪ <u>**The second session:**</u> **(from minute 21:40 to minute 29:24 of the past mentioned video)**: It emphasized on: **Pulse oximetry (indic**ations of using, **Continuous positive airway pressure (CPAP)** (definition, methods of giving CPAP during the initial stabilization period), **Positive-Pressure Ventilation (PPV)** (definition, indications, the common terminology used to

describe positive-pressure ventilation, types of resuscitation devices used to ventilate newborns, Preparations To begin PPV, evaluating the baby' s response to PPV, The MRSOPA ventilation corrective steps) **Laryngeal mask** (what is a laryngeal mask, how do you insert a laryngeal mask?), **A carbon dioxide detector** (definition, function and types), **Endotracheal intubation** (what is an endotracheal tube, indications, benefits, needed supplies and equipments for insertion, type of endotracheal tube should be used in neonatal resuscitation, preparations for endotracheal tube insertion, how do you confirm that the endotracheal tube is in the trachea?, problems should you consider if a neonate' s condition worsens after endotracheal intubation **).**

- **The third session: (From minute 29:24 to minute 43:20 of the past mentioned video):** It covered the following items: **Chest compressions** (when do you begin chest compressions?, where do you stand to administer chest compressions?, where do you position your hands during chest compressions?, when do you stop chest compressions?, the potential complications of chest compressions), **Medications of advanced resuscitation** (a- Epinephrine: what is epinephrine and what does it do?, when Epinephrine to be given?, Epinephrine preparation and doses, what should you expect to happen after giving epinephrine?, b- Volume expander: indications, types given in neonatal advanced resuscitation, c- Methods of giving medications of advanced resuscitation: Umbilical venous catheter insertion, intraosseous insertion), **Special considerations in resuscitation and stabilization of preterm**

newborn (needed additional resources and care for preterm, special precautions after initial stabilization), **Post-resuscitation care** (indications, pot- arrest clinical signs and laboratory findings and management consideration), **Ethics and care at the end of life** (situations in which it is ethical not to initiate resuscitation, how to inform parents that their baby is dying?)

- The researchers continued to reinforce the learned knowledge, responding to any raised questions, and provider feedback.

- **The practical sessions** focused on clinical practices related to cardiopulmonary neonatal resuscitation and followed the theoretical sessions. The practical sessions were applied using videos which **adopted from the web site of the American Academy of Pediatrics: https://www.aap.org/en/pedialink/neonatal-resuscitation-program/nrp-skills-videos/**

- **The following items are covered in the practical parts:**

- **The fourth session:** It concentrated on the following items: **Pulse Oximetry** (how to use pulse oximetry) (**The duration of video was 3.12 minutes**), **Continuous Positive Airway Pressure (CPAP) in the delivery room** (demonstration of CPAP administration as part of delivery room resuscitation) (**The duration of video was 3.27 minutes), Positive pressure ventilation (PPV) devices (devices used to give PPV, how to test their efficacy (The duration of video was 8.19 minutes), Positive-pressure ventilation with face mask/free flow oxygen and orogastric tube**

placement (**The duration of video was 9.21 minutes**), **Positive-pressure ventilation with flow-inflating bag** (**The duration of video was 3.14 minutes**).

- **The fifth session:** It focused on the following items: **The ventilation corrective steps (MR. SOPA)** (**The duration of video was 2.29 minutes**), **Performing and assisting with endotracheal intubation** (endotracheal intubation procedure, responsibilities of both the intubator and the assistant, and method of using the tracheal aspirator/meconium aspirator) (**The duration of video was 9.20 minutes**).

- **The sixth session:** It emphasized on demonstration and demonstration of the following items: **Cardiac compressions during neonatal resuscitation** (**The duration of video was 3.27 minutes**), **3x3 method for placing an emergency umbilical venous catheter (UVC)** (**The duration of video was 7.18 minutes**), **Intraosseous needle insertion** for administering emergency medications and volume expander (**The duration of video was 1.46 minutes**), **Epinephrine and Volume Expanders** (how to draw up epinephrine and volume expander and administer them through an emergency umbilical venous catheter) (**The duration of video was 9.35 minutes**)

4) Evaluation phase:

- Following the implementation of teaching program sessions, immediate posttest was done by the researchers. The nurses' knowledge and practices were reevaluated utilizing the same mentioned pretest tools (the questionnaire form to reassess nurses' knowledge & re-demonstration on CPR manikin to reassess nurses' practices in both

groups. As well as those outcomes were contrasted with the pre-test values using tools (I, II).

- Then, the comparison between the two groups was performed, to evaluate effectiveness of teaching methods used in the educational program.

- Data was gathered by the researchers over the course of two months, from end of May to end of July 2025.

Statistical Analysis:

The study used IBM SPSS software package version 20.0 for data analysis. Percentages and numbers were utilized to explain qualitative data. The Shapiro-Wilk test was utilized to verify the normality of distribution. The quantitative data was described using the range, mean, and standard deviation, furthermore median and interquartile range. 5% level of statistical significance to evaluate the findings. We utilized seven tests: Using a chi-square test to compare groups based on categorical factors. Fisher Exact test or Monte Carlo correction was utilized to correct chi-square when more than 20% of the cells have expected count less than 5. A paired t-test was used for quantitative variables that were regularly distributed to compare between two periods. For quantitative variables that follow a normal distribution, F-test (ANOVA) with multiple measures was used to compare between more than two groups. The relevance between the various stages can be examined using the McNemar and marginal homogeneity tests. In order to compare the two groups that were analyzed, the researchers used a Student t-test for normally distributed quantitative data. The Pearson coefficient was utilized to determine a correlation between two quantitative

variables that are normally distributed (**Armonk, NY: IBM Corp**; **2011).**

Results:

Table (1): Nurses according to their socio-demographic characteristics shows that less than two thirds (60%) of nurses in group (1) and over two thirds (68%) of nurses in group (2) were younger than 30 years with mean age of (31.40 ± 9.83) and (30.72 ± 9.84) years respectively. All (100%) of the studied nurses in both groups were females. More than half (56%) of nurses in group (1) nurses and less than three quarters (72%) of nurses in group (2) lived in rural areas.

Figure (1): Nurses according to their educational degree clarifies that 44% of nurses in group (1) possessed bachelor degree, slightly less than one third (32%) of them possessed technical nursing institute and less than one quarter (24%) of them had secondary school nursing diploma. However, more than half (52%) of nurses in group (2) had technical nursing institute, more than one quarter (28%) of them had bachelor degree and the rest of them (20%) had secondary school nursing diploma.

Figure (2): Nurses according to years of NICU experience presents that more than half (56%) of nurses in group (1) and less than two thirds (64%) of nurses in group (2) had experience for 4 years or more at NICU.

Figure (3): **Nurses regarding previous training on cardiopulmonary neonatal resuscitation program (8th edition)** founds that more than three quarters (80%) of nurses in group (1) and the majority (88%) of nurses in group (2)

had no previous training on cardiopulmonary neonatal resuscitation program (8th edition).

Table (2): Mean Score of total nurses' knowledge domains about cardiopulmonary neonatal resuscitation program (8thedition) displays that statistically significant differences were discovered among nurses in group (1) and among nurses in group (2) related to mean total scores of all knowledge domains about cardiopulmonary neonatal resuscitation pre and immediately post teaching program. Also, statistically significant difference was noticed as regards to mean total scores of all nurses' knowledge domains about cardiopulmonary neonatal resuscitation between both groups immediately post teaching program ($p \leq 0.05$).

Table (3): **Nurses regarding their total knowledge scores about cardiopulmonary neonatal resuscitation program (8th edition)** shows that statistically significant differences were found among nurses in group (1) and among nurses in group (2) related to level scores of total knowledge about cardiopulmonary neonatal resuscitation pre and immediately post teaching program ($p < 0.001$ for each). Also, statistically significant difference was found as regards to the level scores of total knowledge about cardiopulmonary neonatal resuscitation between nurses of both groups immediately post teaching program ($p = 0.003$).

Table (4): Mean score of total nurses' practice domains about cardiopulmonary neonatal resuscitation program (8th edition) portrays that statistically significant differences were discovered among nurses in group (1) and among nurses in group (2) in relation to mean score of total

nurses' practice domains about cardiopulmonary neonatal resuscitation pre and immediately post teaching program (p= 0.010, p <0.001 respectively). Also, statistically significant difference was observed mean score of total nurses' practice domains about cardiopulmonary neonatal resuscitation between both groups immediately post teaching program (p = 0.006).

Table (5): Nurses regarding their total practice scores about cardiopulmonary neonatal resuscitation program (8thedition) illustrates that statistically significant differences were found among nurses in group (1) and among nurses in group (2) related to level scores of their total practice about cardiopulmonary neonatal resuscitation pre and immediately post teaching program (p=002, p<0.001 respectively). Also, statistically significant difference was detected concerning the level scores of total practice about cardiopulmonary neonatal resuscitation between nurses of both groups immediately post teaching program (p = 0.008).

Table (1): Nurses according to their socio-demographic characteristics (n=50)

Socio-demographic characteristics of nurses	Group (1) (n = 25)		Group (2) (n = 25)	
	No.	%	No.	%
Age in years				
20- less than 30 years	15	60.0	17	68.0
30- 50 years	10	40.0	8	32.0
Min. – Max.	20.0 –49.0		20.0 –50.0	
Mean ± SD.	31.40 ± 9.83		30.72 ± 9.84	
Gender [Female]	25	100.0	25	100.0
Place of residence				
Rural	14	56.0	18	72.0
Urban	11	44.0	7	28.0

SD: **Standard deviation**

Table (6): Correlation between total knowledge and total practice of studied nurses presents that a statistically significant positive correlation was clarified between the total knowledge and the total practice among nurses in group (1) pre (p=0.001and r = 0.626) and immediately post (p<0.001 and r = 0.811) teaching program. Also, there was a highly statistically significant positive correlation between the total knowledge and the total practice among nurses in group (2) pre (p<0.001 and r = 0.662) and immediately post (p<0.001 and r = 0.938) teaching program.

Table (7): Relation between total scores of nurses' knowledge and socio-demographic characteristics portrays that there was a significant relation between total score of nurses' knowledge and their education degree, years of NICU experience and their previous training on neonatal resuscitation program (8th edition) in both groups immediately post teaching program (p ≤ 0.05).

Table (8): Relation between total scores of nurses' practice and socio-demographic characteristics demonstrates that there was a significant relation between total score of nurses' practice and their education degree, years of NICU experience and previous training on neonatal resuscitation (8th edition) in both groups immediately post teaching program (p ≤ 0.05).
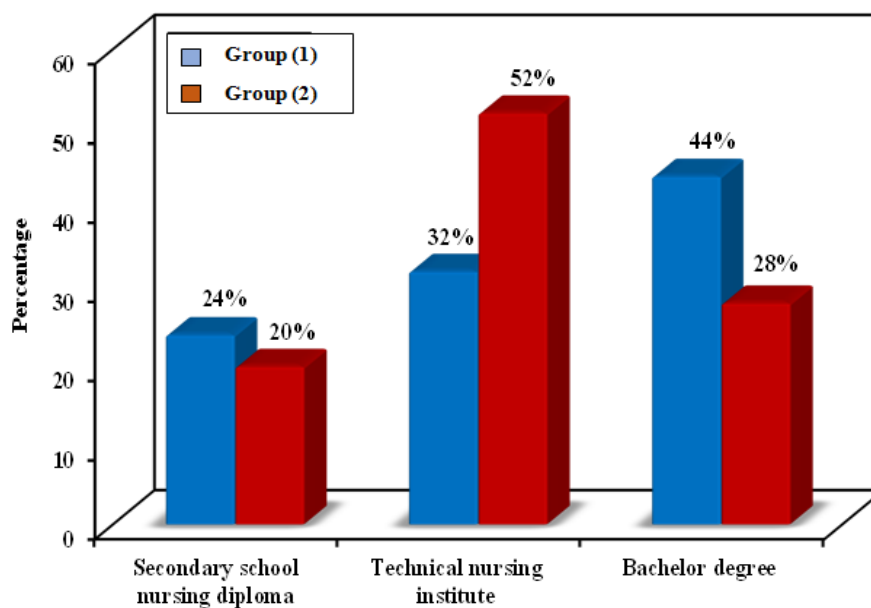
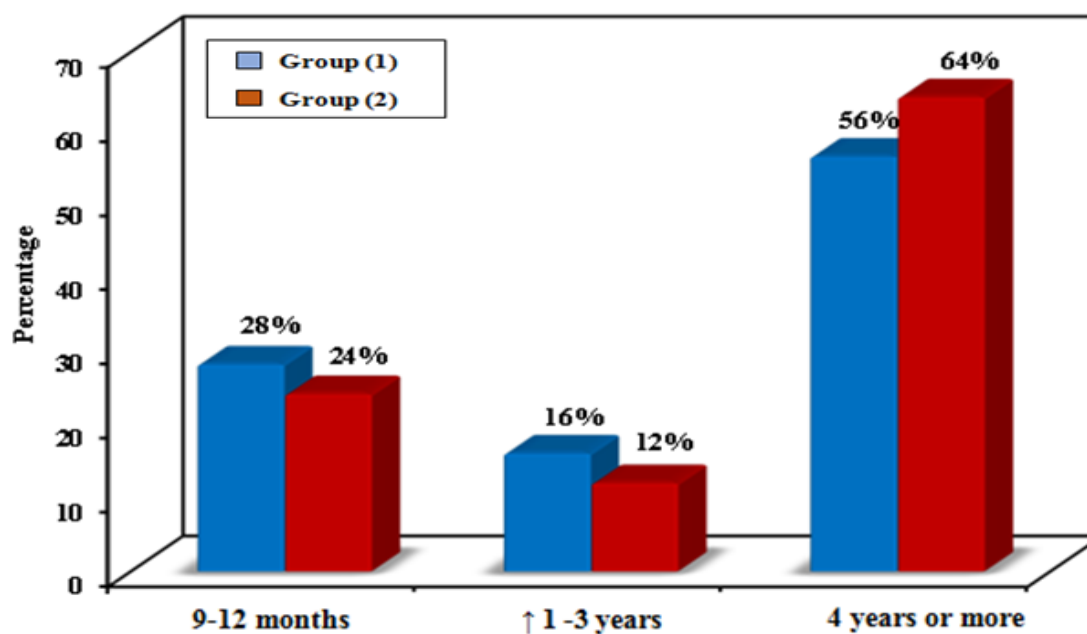**Figure (1): Nurses according to educational degree (n=50)**

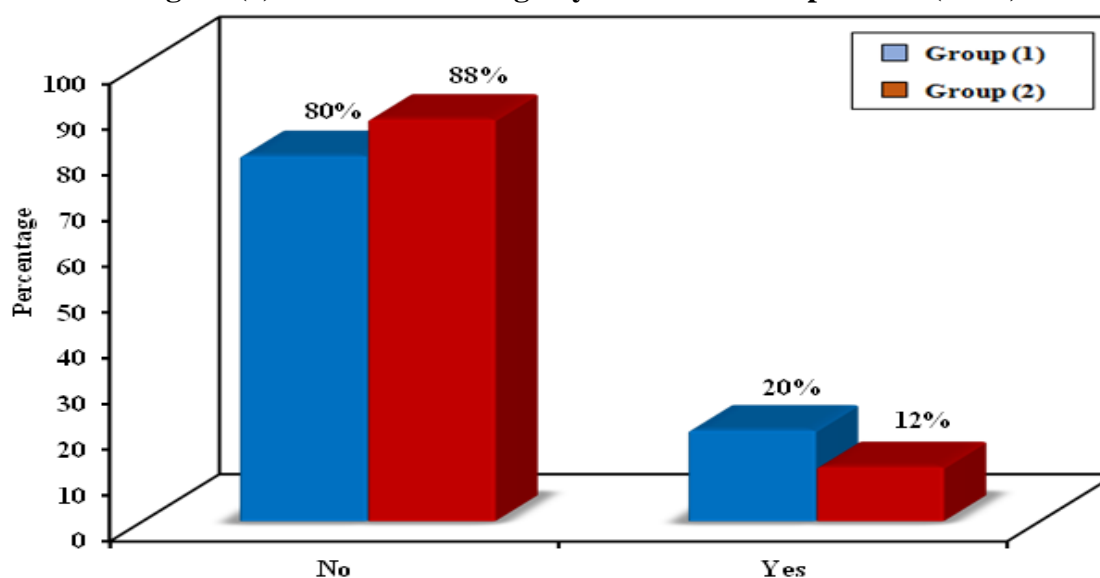**Figure (2): Nurses according to years of NICU experience (n=50)**

Figure (3): Nurses regarding previous training on neonatal resuscitation program (8th edition) (n=50)

Table (2): Mean Score of total nurses' knowledge domains about neonatal resuscitation program (8th edition) (n=50)

Knowledge about neonatal resuscitation program	Group (1) (n = 25)		Group (2) (n = 25)		t (p_1)	t (p_2)
	Pre-test	Post-test	Pre-test	Post-test		
Foundations of Neonatal Resuscitation						
Total score (0 –5)					0.106	4.448*
Mean ± SD.	1.16 ± 1.28	3.16 ± 1.07	1.12 ± 1.39	4.32 ± 0.75	(0.916)	(<0.001*)
t_0 (p_0)	6.433* (<0.001*)		12.394* (<0.001*)			
Anticipating and Preparing for Resuscitation						
Total score (0 –3)					0.000	5.174*
Mean ± SD.	0.56 ± 0.87	1.40 ± 1.0	0.56 ± 0.82	2.56 ± 0.51	(1.000)	(<0.001*)
t_0 (p_0)	3.055* (0.005*)		13.093* (<0.001*)			
Initial Steps of Newborn Care						
Total score (0 –6)					0.437	6.149*
Mean ± SD.	0.92 ± 1.53	3.0 ± 1.35	0.76 ± 1.01	4.96 ± 0.84	(0.664)	(<0.001*)
t_0 (p_0)	4.404* (<0.001*)		17.644* (<0.001*)			
Positive-Pressure Ventilation (PPV)						
Total score (0 –8)					0.867	4.261*
Mean ± SD.	1.20 ± 1.50	5.0 ± 2.0	0.84 ± 1.43	6.92 ± 1.04	(0.390)	(<0.001*)
t_0 (p_0)	7.651* (<0.001*)		19.582* (<0.001*)			
Endotracheal lntubation						
Total score (0 –5)					0.151	2.516*
Mean ± SD.	0.56 ± 0.87	3.92 ± 0.40	0.60 ± 1.00	4.40 ± 0.87	(0.881)	(0.017*)
t_0 (p_0)	18.515* (<0.001*)		19.000* (<0.001*)			
Chest Compressions						
Total score (0 –6)					1.147	3.720*
Mean ± SD.	1.64 ± 1.75	5.0 ± 0.0	1.16 ± 1.14	5.64 ± 0.86	(0.258)	(0.001*)
t_0 (p_0)	9.583* (<0.001*)		17.299* (<0.001*)			

Cont.

knowledge about neonatal resuscitation program	Group (1) (n = 25)		Group (2) (n = 25)		t (p₁)	t (p₂)
	Pre-test	Post-test	Pre-test	Post-test		
Medications of advanced resuscitation **Total score (0 –8)** Mean ± SD.	1.56 ± 2.18	6.44 ± 0.92	1.28 ± 1.46	7.24 ± 1.05	0.534 (0.596)	2.867* (0.006*)
t₀ (p₀)	11.468* (<0.001*)		20.061* (<0.001*)			
Resuscitation and Stabilization of Babies Born Preterm **Total score (0 –3)** Mean ± SD.	0.84 ± 1.03	2.0 ± 0.0	0.68 ± 0.95	2.60 ± 0.58	0.573 (0.569)	5.196* (<0.001*)
t₀ (p₀)	5.642* (<0.001*)		10.559* (<0.001*)			
Post-resuscitation Care **Total score (0 –2)** Mean ± SD.	0.84 ± 0.80	1.36 ± 0.49	0.80 ± 0.71	1.80 ± 0.41	0.187 (0.852)	3.450* (0.001*)
t₀ (p₀)	2.701* (0.012*)		5.774* (<0.001*)			
Special Considerations **Total score (0 –2)** Mean ± SD.	0.16 ± 0.55	1.20 ± 0.41	0.08 ± 0.40	1.68 ± 0.48	0.586 (0.561)	3.827* (<0.001*)
t₀ (p₀)	7.076* (<0.001*)		13.856* (<0.001*)			
Ethics and Care at the End of Life **Total score (0 –2)** Mean ± SD.	0.44 ± 0.71	1.24 ± 0.44	0.40 ± 0.76	1.72 ± 0.46	0.192 (0.849)	3.795* (0.017*)
t₀ (p₀)	4.619* (<0.001*)		8.820* (<0.001*)			

Data is presented as: SD: **Standard deviation, t: Student t-test, t_0: Paired t-test,**
p_0: p value for comparing between the **Pre-test** and **Post-test**,
p_1: p value for comparing between the two studied groups **(Pre-test)**,
p_2: p value for comparing between the two studied groups **(Post-test),**
*: Statistically significant at $p \leq 0.05$

Table (3): Percentage distribution of studied nurses regarding their total knowledge scores about cardiopulmonary neonatal resuscitation program (8thedition) (n= 50)

Total knowledge scores about cardiopulmonary neonatal resuscitation	Group (1) (n = 25)				Group (2) (n = 25)				Test of sig.(p$_1$)	Test of sig.(p$_2$)
	Pre-test		Post-test		Pre-test		Post-test			
	No.	%	No.	%	No.	%	No.	%		
Low	22	88.0	4	16.0	24	96.0	1	4.0	χ^2=1.087 (^{FE}p= 0.609)	χ^2=24.277* (^{MC}p= 0.003*)
Moderate	3	12.0	16	64.0	1	4.0	2	8.0		
High	0	0.0	5	20.0	0	0.0	22	88.0		
MH (p$_0$)	29.500* (<0.001*)				47.500* (<0.001*)					
Total score (0 – 50)										
Min. – Max.	1.0 – 35.0		26.0 –44.0		1.0 – 35.0		34.0 –50.0		t=0.572 (0.570)	t=7.418* (<0.001*)
Mean ± SD.	9.88 ± 10.51		35.04 ± 4.15		8.28 ± 9.23		43.84 ± 4.24			
t$_0$ (p$_0$)	11.074* (<0.001*)				23.295* (<0.001*)					

Data is presented as: SD: **Standard deviation, t: Student t-test, t$_0$: Paired t-test, χ^2: Chi square test, MC: Monte Carlotest, McN: McNemar test, MH: Marginal Homogeneity Test,**

p0: p value for comparing between the **Pre-test** and **Post-test**,
p1: p value for comparing between the two studied groups **(Pre-test)**,
p2: p value for comparing between the two studied groups **(Post-test),**
*: Statistically significant at p ≤ 0.05

Table (4): Mean score of total nurses' practice domains about cardiopulmonary neonatal resuscitation program (8thedition) (n=50)

Practice domains about cardiopulmonary neonatal resuscitation program	Group (1) (n = 25)		Group (2) (n = 25)		t (p$_1$)	t (p$_2$)
	Pre-test	Post-test	Pre-test	Post-test		
- Neonatal Resuscitation Program Quick Equipment Checklist						
Total score (0 – 7)					0.089 (0.929)	2.980* (0.006*)
Mean ± SD.	2.96 ± 1.74	4.16 ± 1.40	2.92 ± 1.41	5.04 ± 0.45		
t$_0$ (p$_0$)	2.777* (0.010*)		7.025* (<0.001*)			
- Critical Performance Steps of Neonatal Resuscitation Program						
Total score (0 – 23)					0.186 (0.853)	2.526* (0.015*)
Mean ± SD.	3.96 ± 4.91	19.36 ± 1.63	3.68 ± 5.69	20.76 ± 2.24		
t$_0$ (p$_0$)	14.039* (<0.001*)		17.168* (<0.001*)			

Data is presented as: SD: **Standard deviation,** t: **Student t-test,** t$_0$: **Paired t-test,**
p$_0$: p value for comparing between the **Pre-test** and **Post-test**,
p$_1$: p value for comparing between the two studied groups **(Pre-test)**,
p$_2$: p value for comparing between the two studied groups **(Post-test),**
*: Statistically significant at p ≤ 0.05

Table (5): Percentage distribution of studied nurses regarding their total practice score about cardiopulmonary neonatal resuscitation program (8thedition) (n= 50)

Total practice scores about cardiopulmonary neonatal resuscitation program	Group (1) (n = 25)				Group (2) (n = 25)				Test of sig.(p$_1$)	Test of sig.(p$_2$)
	Pre-test		Post-test		Pre-test		Post-test			
	No.	%	No.	%	No.	%	No.	No.		
Unsatisfactory	23	92.0	10	40.0	22	88.0	2	8.0	χ^2=0.222 (^{FE}p= 1.000)	χ^2=7.018* (0.008*)
Satisfactory	2	8.0	15	60.0	3	12.0	23	92.0		
^{McN}p$_0$	15.062*(0.002*)				32.051*(<0.001*)					
Total score (0 – 30)									t=0.170 (0.866)	t=3.834* (<0.001*)
Mean ± SD.	6.92 ± 6.47		23.52 ± 1.94		6.60 ± 6.83		25.80 ± 2.25			
t$_0$ (p$_0$)	11.847* (<0.001*)				16.324* (<0.001*)					

Data is presented as: SD: **Standard deviation, t: Student t-test, t$_0$: Paired t-test, χ^2: Chi square test, MC: Monte Carlotest, McN: McNemar test, McN: McNemar test,**
p$_0$: p value for comparing between the **Pre-test** and **Post-test**,
p$_1$: p value for comparing between the two studied groups **(Pre-test)**,
p$_2$: p value for comparing between the two studied groups **(Post-test),**
*: Statistically significant at p ≤ 0.05

Table (6): Correlation between total knowledge and total practice of studied nurses (n= 50)

		Group (1) (n = 25)		Group (2) (n = 25)	
		Pre	Post	Pre	Post
Knowledge vs. total practical competence	r	0.626*	0.811*	0.662*	0.938*
	p	0.001*	<0.001*	<0.001*	<0.001*

Data is presented as: **r: Pearson coefficient,** *: **Statistically significant** at p ≤ 0.05

Table (7): Relation between total scores of nurses' knowledge and socio-demographic characteristics (n=50)

Total scores of Knowledge	N	Group (1) (n = 25)		N	Group (2) (n = 25)	
		Pre	Post		Pre	Post
		Mean ± SD.	Mean ± SD.		Mean ± SD.	Mean ± SD.
Age in years						
20- less than 30 years	15	12.13 ± 12.60	35.40 ± 4.21	17	8.35 ± 10.08	44.82 ± 3.47
30- 50 years	10	6.50 ± 5.13	34.50 ± 4.22	8	8.13 ± 7.72	41.75 ± 5.18
t (p)		**1.550 (0.137)**	**0.523 (0.606)**		**0.056 (0.956)**	**1.764 (0.091)**
Teaching level						
Secondary school nursing diploma	6	7.17 ± 6.94	30.0 ± 4.0	5	3.40 ± 1.52	37.80 ± 3.11
Technical nursing institute	8	6.63 ± 4.03	37.0 ± 2.51	13	9.69 ± 11.20	44.54 ± 2.96
Bachelor degree	11	13.73 ± 14.16	36.36 ± 2.94	7	9.14 ± 7.95	46.86 ± 2.41
F (p)		**1.360 (0.277)**	**10.575* (0.001*)**		**0.873 (0.432)**	**15.525* (<0.001*)**
Years of experience in NICU						
Less than 1 year	7	14.71 ± 15.03	31.71 ± 4.19	6	4.17 ± 1.17	41.50 ± 4.51
1-3 years	4	13.25 ± 14.52	36.25 ± 2.50	3	3.33 ± 1.53	38.33 ± 3.06
4 years or more	14	6.50 ± 4.75	36.36 ± 3.73	16	10.75 ± 10.83	45.75 ± 2.93
F (p)		**1.779 (0.192)**	**3.874* (0.036*)**		**1.693 (0.207)**	**8.043* (0.002*)**
Previous training on neonatal resuscitation program (8th edition)						
No	20	10.85 ± 11.43	34.10 ± 3.74	22	6.32 ± 7.25	43.09 ± 3.95
Yes	5	6.0 ± 4.36	38.80 ± 3.83	3	22.67 ± 10.79	49.33 ± 0.58
t (p)		**0.920 (0.367)**	**2.502* (0.020*)**		**3.483* (0.002*)**	**2.684* (0.013*)**
Place of residence						
Rural	14	7.57 ± 8.58	34.50 ± 4.54	18	9.17 ± 10.31	43.67 ± 4.63
Urban	11	12.82 ± 12.34	35.73 ± 3.69	7	6.0 ± 5.54	44.29 ± 3.30
t (p)		**1.254 (0.223)**	**0.727 (0.475)**		**0.764 (0.453)**	**0.322 (0.751)**

Data is presented as: SD: **Standard deviation**,   t: **Student t-test**,   F: **F for One way ANOVA test**,

p: p value for comparison between the studied categories, *: Statistically significant at p ≤ 0.05

Table (8): Relation between total scores of nurses' practice and socio-demographic characteristics (n=50)

Total scores of practical competences	N	Group (1) (n = 25)		N	Group (2) (n = 25)	
		Pre	Post		Pre	Post
		Mean ± SD.	Mean ± SD.		Mean ± SD.	Mean ± SD.
Age in years						
20- less than 30 years	15	8.13 ± 7.76	23.67 ± 1.99	17	7.71 ± 7.94	26.24 ± 1.79
30- 50 years	10	5.10 ± 3.41	23.30 ± 1.95	8	4.25 ± 2.60	24.88 ± 2.95
t (p)		**1.332 (0.197)**	**0.455 (0.653)**		**1.620 (0.120)**	**1.438 (0.164)**
Teaching level						
Secondary school nursing diploma	6	5.0 ± 4.20	21.67 ± 1.86	5	2.40 ± 0.55	22.80 ± 1.64
Technical nursing institute	8	4.0 ± 3.59	24.50 ± 1.69	13	5.92 ± 5.62	26.31 ± 1.70
Bachelor degree	11	10.09 ± 7.91	23.82 ± 1.54	7	10.86 ± 9.30	27.0 ± 1.73
F (p)		**2.753 (0.086)**	**5.281* (0.013*)**		**2.704 (0.089)**	**10.111* (0.001*)**
Years of experience in NICU						
Less than 1 year	7	9.29 ± 8.40	22.0 ± 1.73	6	4.0 ± 1.79	24.50 ± 2.26
1-3 years	4	8.50 ± 10.41	23.50 ± 1.29	3	2.33 ± 0.58	23.0 ± 1.73
4 years or more	14	5.29 ± 3.60	24.29 ± 1.82	16	8.38 ± 7.99	26.81 ± 1.64
F (p)		**1.038 (0.371)**	**4.073* (0.031*)**		**1.643 (0.216)**	**7.655* (0.003*)**
Previous training on neonatal resuscitation program (8th edition)						
No	20	7.35 ± 7.02	22.95 ± 1.61	22	4.23 ± 2.05	25.50 ± 2.24
Yes	5	5.20 ± 3.49	25.80 ± 1.48	3	24.0 ± 0.0	28.0 ± 0.0
t (p)		**0.657 (0.518)**	**3.597* (0.002*)**		**16.437* (<0.001*)**	**5.232* (<0.001*)**
Place of residence						
Rural	14	6.79 ± 5.89	23.43 ± 2.28	18	6.50 ± 6.73	25.67 ± 2.45
Urban	11	7.09 ± 7.44	23.64 ± 1.50	7	6.86 ± 7.63	26.14 ± 1.77
t (p)		**0.115 (0.910)**	**0.261 (0.797)**		**0.115 (0.909)**	**0.466 (0.645)**

Data is presented as : SD: **Standard deviation**, **t: Student t-test, F**: **F for One way ANOVA test,**

p: p value for comparison between the studied categories, *: Statistically significant at p ≤ 0.05

Discussion:

Asphyxia-related newborn deaths continue to be a major global issue, with 10% of newborns annually needing some form of resuscitation on delivery from an interprofessional team comprising healthcare professionals **(Johnson et al., 2020)**. Effective resuscitation performed by high qualified specialists may lower morbidity and death rates **(O'Currain et al., 2019).** The current study aimed to evaluate the effectiveness of video-assisted versus traditional demonstration teaching program on nurses' performance regarding cardiopulmonary neonatal resuscitation.

Based on the present study outcomes, concerning previous training on cardiopulmonary neonatal resuscitation program (8th edition), the current research revealed that more than three quarters of nurses in group (1) and the majority of nurses in group (2) had no previous training on neonatal resuscitation program (8th edition).From the researchers' viewpoint, this result can be attributed to workload, the cost, or the lack of desire to get new skills and stay up to date after graduation.. This outcome is backed by a study of **Liaqat et al. (2021)** who reported that previous neonatal resuscitation exposure among the experimental and control group was 10% and 16.7% respectively. Also, **Jhuma et al. (2023)** who stated that only less than one quarter of nurses have received prior resuscitation training. These outcomes are in line with the study finding of **Briggs, (2021)** who showed that three- eighths of the health care providers who took part in the research had previous training on newborn resuscitation while less than two thirds of them did not receive previous training on newborn resuscitation.

In relation to nurses' total knowledge scores about cardiopulmonary neonatal resuscitation program, the current study illustrated that statistically significant differences were determined among nurses in group (1) and among nurses in group (2) related to level scores of total knowledge about cardiopulmonary neonatal resuscitation pre and immediately post teaching program. This is because training and teaching programs are effective ways to help nurses become more knowledgeable and skilled after completing them. They accomplish this by reviewing their basic knowledge, strengthening any areas where they were lacking in their pre-training practices and knowledge, and giving them up-to-date information on cardiopulmonary neonatal resuscitation. This is in agreement with **Briggs, (2021)** who detected that immediately after neonatal resuscitation training intervention, there was a significant improvement in knowledge and skills among the primary health care workers including nurses and doctors. The greater immediate post-test contrasted to pre-test scores for all health care workers verify that knowledge and skills were acquired following the intervention.

In the same context this finding goes with the study carried out by **Subin (2017)** who reported that there is a significant difference in pre and post video-assisted teaching intervention as regards to knowledge level of selected staff nurses. This is consistent with the research of **AbdElaziz et al. (2021)** who revealed that following the video-assisted teaching intervention; over two-thirds of the

nurses in the study group had high knowledge, while less than half of this group had inadequate knowledge before the intervention with a statistically significant difference before and after video-assisted teaching intervention. Also, according to **Kavitha (2016)** a significant study avenue for a novel approach to raise awareness is provided by video-assisted teaching technique. Additionally, it helps to highlight beneficial shifts in understanding and enhances the practice of handling life-threatening circumstances.

Moreover, the present study shows that a statistically significant difference was observed as regards to the level scores of total knowledge about cardiopulmonary neonatal resuscitation program between nurses in both groups immediately post teaching program. This result reflects the positive effect of using video-assisted teaching in improving knowledge among nurses in group (2). This can be attributed to the way that the video teaching method improves nurses' knowledge by using sight, sound, and motion to give fundamental explanations of complex subjects and problems; it can also convey information in a way that verbal descriptions or talking alone just cannot; it also serves as a bridge to teaching barriers and facilitates learning for nurses. Thus, videos can foster integrated theoretical and practical understanding.

This finding agrees with **Morgado et al. (2024)** who claimed that movies for medical and nursing education frequently incorporate spoken explanations, dynamic visualizations, surgical simulations, or case presentations with textual content. This multimedia method probably improves knowledge acquisition by facilitating cognitive

processing and helping learners understand difficult medical ideas and procedures. This is in contrast with a study by **NatarajSan et al. (2022)** that examined how well a basic nursing skill could be taught using an educational video-based approach versus a standard general demonstration. The findings revealed that the two groups' knowledge levels did not differ statistically, suggesting that learner outcomes of the two methods of instruction are similar.

Concerning nurses' total practice scores about cardiopulmonary neonatal resuscitation program, the present study portrays that statistically significant differences were discovered among nurses in group (1) and among nurses group (2) related to level scores of their total practice about cardiopulmonary neonatal resuscitation pre and immediately post teaching program. This highlights how crucial and successful training is in updating as well as improving nurses' practical skills. From the researchers' standpoint, using the traditional demonstration method enabled nurses to interact directly with the instructor, ask questions, and receive immediate feedback. This contributed to reinforcing practical skills and minimizing errors during hands-on practice. However, applying video-assisted teaching method allowed nurses to review educational content multiple times, which enhanced their understanding and retention. Also, the inclusion of visual and auditory elements helped convey complex information effectively, particularly for critical situations such as cardiopulmonary neonatal resuscitation that require precision in performance.

This result is supported by **Barkha et al. (2019)** who showed that a significant difference between

the pretest and posttest skill scores of students who were exposed to video-assisted teaching program and traditional demonstration. Furthermore, this finding matches with **Kaur & Charan (2018**) who demonstrated that most of the nurses who were the subject of the study had good practice score on the post-test phase after implementation of structured teaching program.

Additionally, it was evident from the present research that statistically significant difference was detected as regards to the level scores of total practice about cardiopulmonary neonatal resuscitation program between nurses of both groups immediately post teaching program. From the standpoint of the researcher, this illustrates the beneficial impact of applying a video-assisted training modality in enhancing the practice of the nurses under study, which results in the provision of superior nursing care during cardiopulmonary newborn resuscitation. This result may be explained by the fact that video-based learning allows nurses to witness nursing procedures and enables self-correction and review of the steps of clinical practices. Furthermore, videos contribute to readiness for actual practice through repeated exposure to skills. Hence, videos can empower nurses to control their practical competences by providing them with a virtual firsthand experience, which effectively bridges the gap between theory and application.

These findings were in compliance with the study done by **George et al. (2019)** who reported the significant consequences of leveraging video demonstrations to enhance clinical skills instruction for big medical student groups in a variety of venues

with varying resources. Likewise, these results agree with **Morgado et al. (2024)** who stated that video-based learning can promote the application of knowledge in actual health settings by involving learners in real-world scenarios. Video-based learning has enormous potential to enhance knowledge acquisition and skill development in health education. Additionally, they proposed that video-based education benefits skills development in nursing and medicine.

This is supported by **Fatimah et al. (2024)** who presented that students prefer learning with video assistance when they are learning new foundational skills. According to the study's participants, video-assisted learning improved both their readiness and learning experience. In line with results of a study conducted by **Clerkin et al. (2022)** entitled" What is the impact of video as a teaching method on achieving psychomotor skills in nursing? A systematic review and meta-analysis", and presented that the systematic review which was done supports the use of video as a beneficial teaching method when achieving psychomotor skills. This goes with the research of **Mahamud et al. (2022)** who reported that while over four-fifths of the nurses in the study had a competent level of practice after the video-assisted training intervention, the majority previously had an incompetent level of practice.

Also, this outcome is in the same context with **AbdElaziz et al. (2021)** who clarified that the majority of the nurses in the study demonstrated competence after the video-assisted teaching intervention, while just a small percentage did so before. These outcomes disagree with the results of **Barkha et al. (2019)** who showed that although both

the methods of video-assisted teaching program and traditional demonstration were equally effective in enhancing skills, traditional demonstration scored much better than the video-assisted teaching program when the posttest skills were compared.

Concerning correlation between total knowledge and total practice of studied nurses, a statistically significant positive correlation was detected between the total knowledge and the total practice among nurses of control group pre and directly post teaching intervention. These results demonstrate how knowledge affects practice and how nurses' practices will become less effective and dangerous in the absence of accurate, adequate knowledge. This finding was supported by **Safwat & Khorais. (2018**) who showed that there was a significant positive correlation between nurses' knowledge and practices at the post-program phases.

Also, this research revealed that there was a highly statistically significant positive correlation between the total knowledge and the total practice among nurses in group (2) pre and directly post teaching program. This finding implies that skill levels can be readily improved, especially if they are linked to their pertinent scientific foundation. From the researcher's perspective**,** this finding demonstrates the effectiveness of the video-assisted teaching intervention and how well it strengthens the connection between theoretical knowledge and practical skills. The reason for this is that videos help nurses convert theoretical knowledge into precise practical skills by offering a dynamic visual explanation of theoretical material, thereby bridging the gap between theoretical understanding and practical application. They also enable nurses to watch intricate procedures being carried out step-by-step.

This outcome is corroborated by the findings of **Mahamud et al. (2022**) who found a statistically significant positive correlation between the nurses' overall knowledge and practices prior to and following the video-assisted training program. Furthermore, this is consistent with earlier results of a study conducted by **AbdElaziz et al. (2021)** who discovered that following the video-assisted education intervention, nurses' knowledge and practice ratings showed a strong favorable statistical association.

Finally, the current study illustrates that strong significant relations were discovered between total score of nurses' knowledge and total score of nurses' practice and their demographic characteristics (educational degree, years of NICU experience as well as previous training on cardiopulmonary neonatal resuscitation program (8th edition)) in both the control and study groups immediately post teaching intervention. From the researcher's viewpoint, this strong relations across both groups after the teaching intervention highlights that cumulative experience and specialized knowledge gained through qualifications and prior training form a solid foundation upon which practical performance improvements are built. In essence, the teaching interventions didn't create this competence from scratch, but rather enhanced and refined existing knowledge and practical abilities thanks to these fundamental demographic and professional factors.

This finding is in agreement with **AbdElaziz et al. (2021)** who studied relation between nurses' total knowledge scores and their personnel characteristics, and found that, there was a

significant relation between nurses' knowledge total scores and their personal characteristics (age, academic qualification, in addition to years of experience) at pre and post video-assisted teaching program. Additionally, the study findings by **Mahamud (2022**) who revealed a highly statistically significant relationship between the demographics of the nurses under study (age, education level, years of expertise, and prior training) and their knowledge and practices following the video-assisted teaching intervention. In addition, **Shafik & AbdAllah (2015)** reported that the more years a nurse has worked the more knowledgeable and skilled they are. These results differed from the study that was done by **Barkha et al. (2019)** who demonstrated that the subjects' posttest knowledge scores did not significantly correlate with their chosen socio-demographic variables, including age, type of residence, family monthly income, prior academic achievement, and prior experience in dealing with antenatal women (P > 0.05).

At last, according to the current research results, it can be concluded that using of videos as assistance teaching tool aids in helping learners remember the steps involved in clinical procedures (**Barkha et al., 2019**), enables nurses to make mistakes and learn from them without putting real neonates at risk. This enhances the nurses' clinical proficiency while also boosting their self-esteem and equipping them for real-world scenarios. Also, teaching videos objectively improve knowledge review, acquisition and retention, encourage critical thinking, transmit information to the learner simultaneously through the visual and auditory senses, potentially improving learning outcomes and provide a standardized assessment of competency (**Chernikova et al.,**

46

2020). So, nurse educators should integrate modern teaching methods for teaching nurses in clinical settings thus enhancing nurses' knowledge, practices and quality of neonatal care.

Conclusion:

Upon the present study outcomes, it can be concluded that both nurses in the two groups demonstrated improved levels of knowledge and practice immediately post-program compared to pre-program. However, group (2) exhibited significantly greater progress than group (1), reflecting the high positive effect of the video-assisted teaching method

Recommendations:

1- Encourage using of video-assisted teaching method for nurses working at neonatal intensive care unit to improve their performance and achieve better teaching outcomes.

2- Emphasize ongoing training and education of NICU nurses on the updated guidelines in cardiopulmonary neonatal resuscitation for improving their knowledge and practical competence, achieving high quality of neonatal care and reducing the probability of neonatal deaths.

3- Provide nurses working at neonatal intensive care units with handouts and booklets containing the most recent guidelines in cardiopulmonary neonatal resuscitation.

References:

AbdElaziz S, Hassan G & Mohamed R. (2021). Effect of video-assisted teaching intervention on nurses' knowledge and practice regarding arterial blood gases sampling for ventilated children at pediatric intensive care units. *International Journal of Novel Research in Healthcare and Nursing*, *8* (1), 607-623, Available at: www.noveltyjournals.com

American Academy of Pediatrics& American Heart Assosiation. (July 1, 2021). Textbook of Neonatal Resuscitation 8ᵗʰ edition. Available at https://publications.aap.org/aapbooks/book/694/Textbook-of-Neonatal-Resuscitation

Awad H. (2018). Effectiveness of video assist teaching module on fourth years nurses student practice about nasogastric tube feeding- faculty of nursing science Shendi University. *Advance Research Journal of Multi-Disciplinary Discoverie, 27*(1), 2456-1045

Barkha D, Bidita K&Mridula D. (2019). Comparison of the effectiveness of video-assisted teaching program and traditional demonstration on nursing students learning skills of performing obstetrical palpation. *Iranian Journal of Nursing and Midwifery Research*, *24*(2), 118-123. DOI: 10.4103/ijnmr.IJNM

Briggs D, Eneh A & Alikor E. (2021). Basic neonatal resuscitation: retention of knowledge and skills of primary health care workers in Port Harcourt, Rivers State, Southern Nigeria, *Pan African Medical Journal*, *38*(75). DOI: 10.11604/pamj.2021.38.75.25812.

Budhathoki S, Gurung R, Ewald U&Thapa J. (2019). Does the Helping Babies Breathe Programimpact on neonatal resuscitation care practices? Results from systematic review and meta-analysis.*ActaPaediatrica*, *108*(5), 806-13.

Chernikova O, Heitzmann N, Stadler M, Holzberger D, Seidel T& Fischer F. (2020). Simulation-based learning in higher education: a meta-analysis. *Review of Educational Research; 90*(4):499–541. https://doi.org/10.3102/0034654320933544

Clerkin R, Patton D, Moore Z& Nugent L.(2022). What is the impact of video as a teaching method on achieving psychomotor skills in nursing? A systematic review and meta-analysis.*Nurse Education Today journal*, *111*,105280.https://doi.org/10.1016/j.nedt.2022.105280

Devi B., Khandelwal B. & Da M. (2019). Comparison of the effectiveness of video-assisted teaching program and traditional demonstration on nursing students learning skills of performing obstetrical palpation. *Iranian Journal of Nursing and Midwifery Research*, *24*(2), 118–123

Fatimah S, Situmorang R, Sukarjo S, Mottershead R&Subu M. (2024). Exploring nursing students' perceptions of using video-assisted in basic nursing skills teaching and learning: A qualitative study. *Pakistan Journal of Life and Social Sciences*, *22*(2), 9252-9262. https://doi.org/10.57239/PJLSS-2024-22.2.00700

George A , Blaauw D, Green L, Hajinicolaou C, Lala N, Parbhoo K. (2019). Comparison of video demonstrations and bedside tutorials for teaching pediatric clinical skills to large groups of medical students in resource-constrained settings. *International Journal of Teaching Technology in Higher Education*, *16*, 34. https://doi.org/10.1186/s41239-019-0164-z

Holm C, Lund S, Skytte& Molenaar J. (2024). Neonatal mortality and video assessment of resuscitation in four district hospitals in Pemba. *Tanzania Pediatric Research*, *95* (1), 712–721

Jhuma S., Vijayakanthi N., Sankar J., &Dubey N. (2023). Knowledge and skill retention of in-service versus preserves nursing professionals following an informal training program in pediatric cardiopulmonary resuscitation: A Repeated-Measures Quasi-experimental Study. *BioMedical Research International; 6*(5), 291-295. http://dx.doi.org/10.1155/2013/403415

Johnson C, Shen E, Winn K, Digiacobbe G&Akinola M. (2020). Neonatal resuscitation: a blended learning curriculum for medical and physician

assistant students. *MedEdPORTAL*, *16*, 10921.https://doi.org/10.15766/mep_2374-8265.10921

Kariuki E., Sutton C. & Leone T. (2021). Neonatal resuscitation: current evidence and guidelines. *British Journal of Anaesthesia Education*, *21*(12), 479–485.DOI: 10.1016/j.bjae.2021.07.008.

Kaur A. &Charan, G. (2018). A study to assess the effectiveness of STP on knowledge and practice regarding ABGs among intensive care unit nurses in selected hospitals at Jalandhar, Punjab. *International Journal of Health Sciences and Research*, *8*(8), 182-188. Available at www.ijhsr.org

Kavitha. (2016). A Study to evaluate the effectiveness of video assisted teaching on knowledge regarding BLS among II Year GNM Students in ShriAnand School of Nursing at Rajkot Dist. *International Journal of Nursing Education and Research*, *4*(4), 429-430. DOI:10.5958/24542660.2016.00078.8.

Liaqat M, Hussain M, Afzal M, Altaf M& Khan S. (2021). Pedagogical framework versus traditional method on knowledge and self-efficacy of nursing students regarding neonatal resuscitation: A randomized controlled trial. *International Journal of Nursing Education*, *13*(4), 99-108. DOI:10.37506/ijone.v13i4.16594

Mahamud H, Thabet A, Ayed M&Sayed E. (2022). Effect of video-assisted teaching intervention on nurses' knowledge and practices regarding pediatric blood transfusion-dependent β-Thalassemia Major. *Egyptian Journal of Health Care*, *13*(3)

Morgado M, Botelho J, Machado V& Mendes J. (2024). Video-based approaches in health education: a systematic review and meta-analysis. Scientific Reports, *14*:23651. https://doi.org/10.1038/s41598-024-73671-7

Natarajan J, Joseph, M, Al Shibli Z& Al Hajji S.(2022). Effectiveness of an interactive educational video on knowledge, skill and satisfaction of nursing students', *Sultan Qaboos University Medical Journal*, *22*(4): 546-553. https://doi.org/10.18295/squmj.2.2022.013

O'Currain E, Peter G. Davis P&Thio M. **(2019).** Teaching Perspectives: Toward More Effective Neonatal Resuscitation: Assessing and Improving Clinical Skills. *Neoreviews*, *20* (5), e248–e257. https://doi.org/10.1542/neo.20-5-e248

Safwat A. &Khorais A. (2018). Effectiveness of a computer-based learning module on arterial blood gas interpretation among staff nurses in critical care units. *Innovative Journal of Medical and Health Science*, *8* (3), 31- 40

Shafik S.&Abd Allah E. (2015). Improving the quality of nursing care for patients with leukemia in day care units through nursing education. *American Journal of Nursing Science*, *4*(3), 63-72.

Shukla V., Carlo W, Niermeyer S , Guinsburg R. (2022). Neonatal resuscitation from a global perspective. *Semin Perinatol, 46* (6):151630. Doi:10.1016/j.semperi.2022.151630.

Subin S. (2017). Assessing the effect of video-assisted teaching on knowledge regarding arterial blood gas analysis and interpretation among staff nurses working in selected hospitals in Bhopal.*Nursing Journal of India*, *108*(4), 173-175

Weimar. Z, Nestel. D, Battista A, Best S, Kumar A &Blank D. (2024). Impact of the neonatal resuscitation video review program for neonatal staff: a qualitative analysis. *Society of Pediatric Research*. https://doi.org/10.1038/s41390-024-03602-9

World Health Organization. (2020). Newborns: Improving Survival and Well-Being. Available at https://www.who.int/news-room/fact-

sheets/detail/newborns-reducing-mortality. *Accessed on 20 April 2025*

World Health Organization. (2024). Perinatal asphyxia.Available
at: https://www.who.int/teams/maternal-newborn-child-adolescent-health-and-ageing/newborn-health/perinatal-asphyxia. *Accessed on 20 April 2025*

.

Wyckoff M, Weiner C& Neonatal Life Support Collaborators. (2021). International consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations. *Resuscitation*, *169*, 229-311.https://doi.org/10.1016/j.resuscitation