Migration Letters

Volume: 20, No: S2(2023), pp. 744-752

ISSN: 1741-8984 (Print) ISSN: 1741-8992 (Online)
www.migrationletters.com

Evaluation of Nurses' Malpractices Related to Neonatal Resuscitation

Khitam Abdulateef Hatem[1], Afifah Radha Aziz[2]

Abstract

Background: Caring for severely ill children, particularly newborns, who are at risk of medical negligence is a scenario that emergency physicians and nurses see seldom but in which the stakes are exceptionally high.

Objective(s): This study aims to evaluate nurses' malpractices related to neonatal resuscitation.

Methodology: A descriptive cross-sectional study was used to guide this study in Al-Nasiriyah Teaching Hospitals for the period from February 6th, 2023, to April 17th, 2023.

Results: The results display that overall evaluation of nurses 'malpractices related to neonatal resuscitation over time was moderate.

Conclusion: Nurses'malpractices related to neonatal resuscitation over time were moderate.

Recommendations: Educational programs are highly recommended for nurses about neonatal resuscitation. Activates the role of continuing nursing education in all Iraqi hospitals to improve nurses practice and decrease malpractice regarding neonatal resuscitation.

Keywords: *Malpractices, Neonatal Resuscitation, Nurses.*

Introduction

Caring for severely ill children, particularly newborns, who are at risk of medical negligence is a scenario that emergency physicians and nurses see seldom but in which the stakes are exceptionally high (1). The number of pediatric cases that residents see during their training varies greatly, and the effect this has on their level of competency is unknown. Practical experience is given a significant amount of weight in nursing education, particularly in pediatric intensive care units (PICU) and the resuscitations that take place in emergency departments (2).

Resuscitating infants who have suffered birth asphyxia is known as neonatal resuscitation or newborn resuscitation. About a quarter of all infant deaths occur at delivery as a result of asphyxia. There are many rapid and complex physiological changes that occur throughout the intrauterine period (3). The transition from dependent placental gas exchange to spontaneous air breathing and pulmonary gas exchange is accompanied by a

[1] Pediatric Department, College of Nursing, University of Baghdad, Baghdad, Iraq, khitam.almohammed@gmail.com
[2] Professor, Pediatric Nursing Department, College of Nursing, University of Baghdad, Baghdad, Iraq, dr.afifa@conursing.uobaghdad.edu.iq

number of novel and unfamiliar sensations for the newborn. No issues have arisen throughout this transition (4).

In the resuscitation phase, improper procedures typically arise for one of two reasons: first, there is a lack of current training, and second, there is an excessive amount of labor to be done. It is believed that between 5 and 10 percent of infants who have just been born will require some level of active resuscitation in order for this transition to take place (5,6). Every delivery must have somebody present who is knowledgeable in neonatal resuscitation in case the baby needs it. All medical professionals who assist in the delivery of babies are required to have training in neonatal resuscitation (7,8).

Children account for around a quarter of all visits to emergency rooms (EDs) in the United States. Community emergency rooms see more children than any other type of doctor's office. There is a shortage of resources, personnel, and experience to provide comprehensive pediatric and newborn critical care in many hospital emergency rooms that see less than 15 children each day. Because of this, it's crucial for all ERs and ICUs to be equipped to stabilize pediatric patients before transferring them to a higher care facility (9,10).

When a newborn baby needs to be stabilized and resuscitated, the advanced clinical neonatal nurse is a member of the team that provides care for the baby. In these kinds of circumstances, human performance can be broken down into three fundamental categories: technical abilities, non-technical abilities, cognitive abilities, and behavioral abilities (11). The theory known as "sociotechnical systems" asserts that these components are, to a certain extent, inextricably linked to one another. The "human factor" is a term that is associated with the sociotechnical systems theory. This aspect of the theory can be attributed to the individual, the team, or the manner in which humans interact with their surroundings (12). This study aims to evaluate nurses' malpractices related to neonatal resuscitation.

Methodology

Study Design

A descriptive study was used to guide this study.

Setting: This study was conducted in Al-Nasiriyah Teaching Hospitals during the period from February 6th, 2023, to April 17th, 2023.

Ethical Considerations

Ethical approval for the study is obtained from the college of nursing. scientific research ethical committee before conducting the study from the study`s chosen community, explain the study main purpose and the desired goals for the sample that will be included in the study and promise to keep all data collected from the sample strictly confidential and use it only for scientific purpose related to the study. The researcher told all participants that the results of the check list would be utilized specifically for research purposes. Also told those that all participants are autonomous individuals have the right to refuse involvement.

Measures

The researcher used a check list from international research (Development of a Strategic Process Using Check Lists to Facilitate Team Preparation and Improve Communication During Neonatal Resuscitation) after taking permission from the researcher the researcher just modified the check list that turned it into a state of negation in order to suit the topic and objectives of the research , and then presented it to the experts and the ethics committee , which was then used to collect data for a research project at (Bint-Alhuda, Al-Haboubi and Mohammed Al-Mosawi Teaching Hospitals).

Setting

The study was conducted at AL-Nasiriya teaching Hospitals including (Bint-Alhuda, Al-Haboubi, and Mohammed Al-Mosawi Teaching Hospital).

Study Sample

A convenience sample of 65 nurses working at NICU, labor room, and resuscitation unit at operation wards. Ten nurses were excluded from the study sample as part of a pilot study.

Data Collection

Collection of sixty-five nurses from different educational level from hospitals, the data was obtained by the researcher utilizing a modified practice check list, which was then examined to through observations with closed-ended structured questions. The applied response was given a score of (3), the improperly applied answer was given a score of (2), and the not applied answer was given a score of (1). During the morning and evening shifts, the nurses were examined on their practices. Each nurse was given open time to complete the resuscitation process. Concerning the data collection of practice, the researcher determined (1-1.67) for the high practice level, (1.68-2.33) for the moderate practice level, (2.34-3) for the poor practice level.

Data Analyses

The data of the present study were analyzed through the use of the Statistical Package of Social Sciences (SPSS) version (26).

Results

Table 1. Evaluation of nurses' malpractices related neonatal resuscitation over time (N = 65)

Items	Observations	*N*	Mean	S. D	Evaluation
1. Situational awareness/leadership	1st Obervation	65	2.37	0.802	Good
1.1. Leader seemingly not aware of this event immediately	2nd Obervation	65	2.34	0.796	Good
	3rd Observation	65	2.15	0.815	Moderate
1.2. Leader doesn't communicate events to team	1st Obervation	65	2.38	0.764	Good
	2nd Obervation	65	2.48	0.664	Good
	3rd Observation	65	2.31	0.789	Moderate
1.3. No action taken to manage this event	1st Obervation	65	2.51	0.664	Good
	2nd Obervation	65	2.51	0.640	Good
	3rd Observation	65	2.51	0.664	Good
2. Team function	1st Obervation	65	2.38	0.678	Good
2.1. No clearly defined and functioning lead resuscitator	2nd Obervation	65	2.34	0.691	Good
	3rd Observation	65	2.38	0.678	Good
2.2. No minimal overlap of individual team member function	1st Obervation	65	2.18	0.827	Moderate
	2nd Obervation	65	2.29	0.765	Moderate
	3rd Observation	65	2.18	0.827	Moderate
2.3. No Evidence of team collaboration /cooperation	1st Obervation	65	2.17	0.858	Moderate
	2nd Obervation	65	2.38	0.744	Good
	3rd Observation	65	2.17	0.858	Moderate
2.4. No Evidence of communication	1st Obervation	65	2.06	0.768	Moderate
	2nd Obervation	65	2.17	0.741	Moderate
	3rd Observation	65	2.06	0.768	Moderate

3. Preparation and initial steps	1st Obervation	65	2.20	0.754	Moderate
3.1. No Checking of equipment	2nd Obervation	65	2.20	0.754	Moderate
	3rd Observation	65	2.20	0.754	Moderate
3.2. Placed incorrectly on warmer	1st Obervation	65	2.31	0.748	Moderate
	2nd Obervation	65	2.34	0.776	Good
	3rd Observation	65	2.31	0.748	Moderate
3.3. Improperly Positioned with neck slightly extend	1st Obervation	65	2.08	0.797	Moderate
	2nd Obervation	65	2.06	0.788	Moderate
	3rd Observation	65	2.20	0.754	Moderate
3.4. No Suctioned mouth then nose only if necessary.	1st Obervation	65	2.15	0.755	Moderate
	2nd Obervation	65	2.17	0.762	Moderate
	3rd Observation	65	2.15	0.755	Moderate
3.5. Doesn't dry infant thoroughly	1st Obervation	65	1.94	0.882	Moderate
	2nd Obervation	65	1.98	0.875	Moderate
	3rd Observation	65	1.94	0.882	Moderate
3.6. Doesn't remove wet linen	1st Obervation	65	2.03	0.883	Moderate
	2nd Obervation	65	2.06	0.882	Moderate
	3rd Observation	65	2.03	0.883	Moderate
4. Communication of heart rate to lead resuscitator	1st Obervation	65	2.40	0.787	Good
4.1. No ECG electrode placed	2nd Obervation	65	2.40	0.787	Good
	3rd Observation	65	2.40	0.787	Good
4.2. No Heart rate checked by approved method (stethoscope, palpating cord or brachial artery)	1st Obervation	65	2.29	0.723	Moderate
	2nd Obervation	65	2.29	0.723	Moderate
	3rd Observation	65	2.29	0.723	Moderate
4.3. No Heart rate communicated to resuscitator (tapped out with finger, verbally communicated)	1st Obervation	65	2.46	0.663	Good
	2nd Obervation	65	2.45	0.662	Good
	3rd Observation	65	2.46	0.663	Good
5. Bag mask ventilation	1st Obervation	65	2.03	0.901	Moderate
5.1. Incorrect mask size chosen	2nd Obervation	65	2.08	0.889	Moderate
	3rd Observation	65	2.08	0.889	Moderate
5.2. Incorrect rate (40-60)	1st Obervation	65	2.42	0.583	Good
	2nd Obervation	65	2.43	0.585	Good
	3rd Observation	65	2.42	0.583	Good
5.3. incorrect pressure and seal	1st Obervation	65	2.26	0.668	Moderate
	2nd Obervation	65	2.29	0.701	Moderate
	3rd Observation	65	2.26	0.668	Moderate
5.4. No re-evaluated for response (HR and skin color after 30 seconds)	1st Obervation	65	2.32	0.752	Moderate
	2nd Obervation	65	2.31	0.748	Moderate
	3rd Observation	65	2.42	0.583	Good
6. Intubation	1st Obervation	65	2.17	0.840	Moderate
6.1. Impropriate decision based on clinical condition of infant (prolonged or ineffective bag & mask, tracheal suctioning for meconium, to facilitate CPR coordination.	2nd Obervation	65	2.34	0.815	Good
	3rd Observation	65	2.15	0.815	Moderate
6.2. Incorrect tube size	1st Obervation	65	2.28	0.801	Moderate
	2nd Obervation	65	2.29	0.765	Moderate
	3rd Observation	65	2.22	0.780	Moderate
6.3. Incorrect handling of the laryngoscope	1st Obervation	65	2.05	0.818	Moderate
	2nd Obervation	65	2.14	0.808	Moderate
	3rd Observation	65	2.22	0.780	Moderate
6.4. No Position checked (auscultate, chest rising)	1st Obervation	65	1.94	0.846	Moderate
	2nd Obervation	65	2.08	0.816	Moderate
	3rd Observation	65	1.94	0.846	Moderate

7. Cardiac massage	1st Obervation	65	2.08	0.777	Moderate
7.1. Impropriate decision based on clinical condition of infant (HR <60 after 30 sec ventilation)	2nd Obervation	65	2.12	0.801	Moderate
	3rd Observation	65	2.09	0.765	Moderate
7.2. Incorrect method (either 2 finger or thumb).	1st Obervation	65	2.22	0.780	Moderate
	2nd Obervation	65	2.22	0.780	Moderate
	3rd Observation	65	2.48	0.687	Good
7.3. Incorrect rate and depth of chest compression	1st Obervation	65	2.37	0.802	Good
	2nd Obervation	65	2.43	0.770	Good
	3rd Observation	65	2.37	0.802	Good
7.4. Incorrect rate of ventilation	1st Obervation	65	2.66	0.538	Good
	2nd Obervation	65	2.62	0.604	Good
	3rd Observation	65	2.55	0.638	Good
7.5. Incorrect Coordination between compression and ventilation	1st Obervation	65	2.71	0.579	Good
	2nd Obervation	65	2.69	0.584	Good
	3rd Observation	65	2.71	0.579	Good
7.6. No re-evaluated for response	1st Obervation	65	2.45	0.662	Good
	2nd Obervation	65	2.43	0.661	Good
	3rd Observation	65	2.43	0.661	Good
8. Drugs	1st Obervation	65	1.40	1.012	Moderate
8.1. Impropriate use of Epinephrine (dose and route)	2nd Obervation	65	1.52	0.970	Moderate
	3rd Observation	65	1.54	1.032	Moderate
8.2. Impropriate use of Naloxone (dose and route)	1st Obervation	65	1.55	1.046	Moderate
	2nd Obervation	65	1.14	1.088	Poor
	3rd Observation	65	1.00	1.146	Poor
8.3. No Re-evaluated for response	1st Obervation	65	1.74	0.989	Moderate
	2nd Obervation	65	1.55	0.919	Moderate
	3rd Observation	65	1.54	1.062	Moderate

"(MS) Mean of Scores, (SD) Standard deviation, Level of Evaluation (Poor=1-1.66, Moderate=1.67-2.33, Good= 2.34-3)".

Table shows that statistically evaluation of nurses' malpractices toward neonatal resuscitation at three periods of observations of the study Sample that were most of study sample within moderate level of evaluation in regarding to the evaluation of nurse's malpractices toward neonatal resuscitation.

Table 2. Overall evaluation of nurses' malpractices related to neonatal resuscitation over time

Domains	N	Mean	SD	Eva.
1. Situational Awareness /Leadership.	65	2.39	0.547	Good
2. Team Function	65	2.23	0.533	Moderate
3. Preparation and Initial Steps	65	2.12	0.542	Moderate
4. Communication of Heart Rate to Lead Resuscitator	65	2.38	0.488	Good
5. Bag Mask Ventilation	65	2.27	0.477	Moderate
6. Intubation	65	2.15	0.501	Moderate
7. Cardiac Massage	65	2.42	0.389	Good
8. Drugs	65	1.44	0.526	Poor
Overall Evaluation	65	2.18	0.247	Moderate

=number, "(MS) Mean of Scores, (SD) Standard deviation, Level of Evaluation (Poor=1-1.66, Moderate=1.67-2.33, Good= 2.34-3)."

Table displays that overall evaluation of nurses 'malpractices toward neonatal resuscitation at three periods of observation of study sample that were moderate level of neonatal resuscitation.

Discussion

The overall evaluation of nurses 'malpractices toward neonatal resuscitation at three periods of observation of study sample that were moderate level of neonatal resuscitation, as shown in Table (2).

The statistical evaluation of nurses' malpractices toward neonatal resuscitation at three periods of observations of the study Sample that were most of study sample within moderate level of evaluation in regarding to the evaluation of nurses' malpractices toward neonatal resuscitation, as shown in Table (2).

Consistent with our findings, a study conducted in Nepal revealed that the staff did not adhere to the guidelines in most aspects. The administration of bag-and-mask ventilation was found to be suboptimal, while the application of suction and oxygen was observed to exceed the recommended protocol. Additional research should be conducted to investigate the root causes of noncompliance with neonatal resuscitation protocols, with the aim of enhancing adherence (13).

In contrast, a study conducted in the United Kingdom was unable to ascertain the reasons behind the failure to complete recommended tasks within the stipulated time frames for a significant number of infants. Considering the positive correlation between experience and neonatal resuscitation proficiency, it is postulated that the observed performance may represent a superior level of skill. It is possible that staff members may exhibit a tendency to carry out tasks at a slower pace for an infant who is perceived to be in good health as compared to an infant who is perceived to be in poor health. Nevertheless, it is improbable that the caregivers' assurance regarding the infant's well-being is the only reason for the extended duration of task completion. The failure to complete tasks within the recommended time frame in a proportion of infants at our hospitals may be attributed to inadequate team training. It is plausible that enhancing the training program could potentially enhance performance (14).

As per a study conducted in India, it was found that nurses exhibit an average level of incomplete practice in terms of equipment preparation. During the initial stages of resuscitation, it was observed that all participants had taken some action, however, a majority of them had executed the task incorrectly or incompletely. Nonetheless, the performance exhibited during the final two steps was notably inadequate. The utilization of positive pressure ventilation in conjunction with chest compression is a commonly employed technique in resuscitation efforts. The majority (79.3%) of participants exhibited a lack of knowledge regarding positive pressure ventilation and chest compression techniques. The remaining individuals possessed an erroneous understanding of the matter. A limited number of participants, specifically one or two individuals, demonstrated a high level of proficiency in the subject matter under consideration (15).

The research revealed that while individuals possess a certain level of theoretical understanding, their practical proficiency in utilizing bag-mask ventilation and chest compression is notably inadequate. Therefore, it is imperative to conduct workshops that provide practical demonstrations of the initial minute of neonatal resuscitation for nursing personnel (16).

Research conducted in Spain revealed that 16% of their resuscitations were carried out in accordance with the algorithm. The incidence of errors per resuscitation was minimal. The worldwide compliance rate with the algorithm was 80.9%. The study found that the

implementation of the algorithm demonstrated optimal execution of ventilation and surfactant administration, while suboptimal adherence was observed during the preparatory and initial stages (17). Timing was found to be a significant factor contributing to numerous errors. The accuracy of resuscitations conducted by on-call pediatricians was found to be comparable to that of staff neonatologists. Numerous studies conducted by various authors have demonstrated that there is a tendency for performance to frequently diverge from established guidelines. This study represents the initial documentation of compliance with the neonatal resuscitation protocol for extremely premature neonates in a tertiary healthcare facility in Spain (18,19).

According to a recent study conducted in Kenya, the unsatisfactory performance of healthcare personnel in this crucial area highlights the pressing necessity for enhanced training. It is advisable to contemplate extending the length and enhancing the caliber of formal instruction in pre-service medical education as a means of ensuring satisfactory neonatal outcomes. Nurses, irrespective of their educational background, exhibited poor performance. This concerning observation suggests a potential deficiency in formal neonatal care training or a lack of enthusiasm towards the topic (20,21).

It is plausible that the deficiencies in knowledge identified in this study, which are associated with lower scores, could potentially be mitigated through the implementation of refresher courses and formal training programs. It is imperative to monitor the translation of acquired knowledge and skills by trainees into clinical practice and conduct regular assessments of their competency levels (22,23,24).

According to the researcher the assessment of malpractices in neonatal resuscitation typically involves evaluating various aspects, such as adherence to protocols, proper use of equipment, timely initiation of resuscitative measures, and effective communication within the resuscitation team.

The moderate level observed in this study implies that there were some areas where the nurses exhibited substandard practices or deviations from recommended standards during the observed periods(25,26,27).

Conclusion

Nurses ‘malpractices toward neonatal resuscitation at three periods of observation of study sample that were moderate level of neonatal resuscitation.

Recommendations

Educational programs are highly recommended for nurses about neonatal resuscitation. Activates the role of continuing nursing education in all Iraqi hospitals to improve nurses practice and decrease malpractice regarding neonatal resuscitation.

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