Effectiveness of Health Educational Program on Nurse's Practices toward Care of Neonates with Hypoglycemia at Neonatal Intensive Care Unit in Al-Nasiriya City

Hussein Oraibi Hawi[1], Suad Hassoon Khudhair[2]

[1]MSC Student,[2]Assist. Professor, University of Baghdad , College of Nursing, Pediatric Nursing Department, Iraq

Abstract

Background: In the neonatal age, hypoglycemia is the most common metabolic disturbance. A common problem in newborn infant care is screening at-risk babies and controlling low blood glucose levels in the first hours to days of life**.**

Methodology: A quasi- experimental design used in the present study with application of a (pre-test/ post-test I, post-test II), The study was carried out at NICU in teaching hospitals in Nasiriya city, Iraq (Bint Al-huda Teaching and Muhammed Al-Musawi Children Hospitals). The research sample includes (40) nurses working in NICU. They are selected by using non probability sampling (purposive sample).

Results : The findings of the study in this table indicate that, according to the mean of the score level of assessment, there is low level of assessment of 40 (100%) at level (1-1.66) the mean of score and standard deviation are (1.25±0.087) at the pretest. There is high level of assessment of 40 (100%) at level (2.34-3) the mean of score and standard deviation are (2.54±0.097) at the posttest I. There is high level of assessment of 23 (82.5%) at level (2.34-3) the mean of score and standard deviation are (2.47±0.154) at the posttest II. the finding indicated that the improvement the nurses practice toward care neonates with hypoglycemia in the Posttest II .

Conclusion: The program has effectiveness on the nurses' level of practice toward neonatal hypoglycemia during the 2 period of test, the study group have low level of practice before implementation of an educational program and the level of practice ascend to high level at posttest I and stay in high level at posttest II. There is a significant deference between the means of the nurses practice before and after implementation of the program.

Recommendation: The researcher suggests that nurses' practices be assessed on a regular basis to identify any flaws that may be affecting their care of neonates with hypoglycemia. The importance of fully utilizing continuing medical education to provide neonatal hypoglycemia courses for all NICU nurses.

Keywords: *Nurse's Practices, Care of Neonates, Hypoglycemia, Neonatal Intensive Care*

Introduction

In the neonatal age, hypoglycemia is the most common metabolic disturbance. A common problem in newborn infant care is screening at-risk babies and controlling low blood glucose levels in the first hours to days of life. Hypoglycemia is a risk factor for infants born to diabetic mothers, LGA (birth weight >90th percentile), SGA (birth weight 10th percentile), low birth weight (>1800 to 2500 grams), and preterm birth (35-37 weeks) [1].

Hypoglycemia, which is characterized as a plasma glucose level of less than 30 mg/dL (1.65 mmol/L) in the first 24 hours and less than 45 mg/dL (2.5 mmol/L) after that, is the most common metabolic problem in newborns. Mental retardation, seizures, developmental delays, and personality disorders are all long-term

consequences. Severe hypoglycemia, according to some evidence, can impair cardiovascular role[2].

Hypoglycemia can manifest clinically as lethargy, irritability, jitteriness, apnea, seizures, and other symptoms, or it can go unnoticed. The neurodevelopmental outcome of symptomatic hypoglycemia is known to be poor, but the outcome of asymptomatic hypoglycemia is unknown. Because of the potential for long-term damage, these asymptomatic hypoglycemic infants should be handled as well. Parenteral continuous glucose infusion is used to treat symptomatic hypoglycemia. Asymptomatic hypoglycemia is treated with breastfeeding first. Breastfed babies have lower blood glucose levels than formula-fed babies[3].

Premature babies' survival chances are often determined by nursing care provided in the first hours after birth, particularly for premature babies or those with low birth weight relative to gestation period. Warmth, physical care, careful feeding, and infection protection are all necessary for these babies, as well as intensive care during pregnancy[4].

The most important intervention for reducing neonatal morbidity and mortality is quality health care immediately after the critical period of labor and delivery. To measure the quality of health care services based on patient health outcomes [5].

Health education has long been regarded as an important aspect of nursing practice. Education of nurses and patients is as important as it has always been. According to the definition of health education, it is "the dissemination of health-related information and the development of the skills, attitudes, and confidence required for people to take action to improve their health." All educational activities related to patient education are referred to as pedagogy. Nurses must understand both the content of health education programs and their pedagogical role in order to provide health education to their patients[6].

Knowledge-based approaches to improve nursing practice include research, quality improvement (QI), and evidence-based practice (EBP). Nurses must conduct research to fill empirical knowledge gaps, continuously monitor health care policies and procedures (QI), and gather and review evidence in a systemic manner (EBP). Research, quality improvement, and evidence-based practice are useful tools in the health-care setting because they benefit patients, families, health-care team members, and nurses[7].

Objectives of the Study

1. To assessment of nurses practices need toward care of neonates with hypoglycemia at neonatal intensive care unit And constructing a health education program for nurses practices toward care of neonate with hypoglycemia at neonatal intensive care unit.

2. To Finding out the relationship between effect of health education program and nurses demographic characteristics of the study.

Methodology

Design of the Study:

A quasi- experimental design used in the present study with application of a (pre-test/ post-test I, post-test II), approach for the study group(One group), the study was carried out from 1th September, 2020 to 30th April 2021 on nurses working at neonatal intensive care units in Al-Nasiriya city, Iraq to evaluate the effectiveness of health educational program on nurses practice toward neonatal hypoglycemia.

Ethical Considerations

The nurses were fully acquainted of the current study and its aims and then a voluntary verbal consent was obtained in order to participate in the study. Also, ethical approval was obtained from ethical committee of research in the Faculty of Nursing/University of Baghdad regarding confidentiality and anonymity of participants.

Setting and sampling of the Study:

The study was carried out at NICU in teaching hospitals in Nasiriya city (Bint Al-huda Teaching hospital and Muhammed Al-Musawi Children Hospital). The research sample includes (40) nurses working in NICU. They are selected by using non probability sampling (purposive sample).

The Study Instrument:

The study instrument was constructed depending

on literature reviews and previous studies related to the neonatal hypoglycemia. It is a questionnaire format for the research purpose and composed of two parts and these parts are:

1. **Demographic Data Form:** this part consists of (7) items which include: (gender, age, level of education, marital status, their years of service in nursing, years of service in NICU, and number of training session related to the subject).

2. Check list of nurses Practice toward neonatal hypoglycemia

This part is related to evaluate of the practice of nurses for pre and post program. It is consisted of 2 domains. The 1st domain related to the nursing role in the care of neonates with hypoglycemia and composed of 22 items. The 2nd part related to preventive measures for hypoglycemia for newborns and composed of 9 items.

The implementation of educational program) was begun from 4th to 11th January 2021. The investigator informed the nurse about the study to insure their consent and discus the plan of the program. **The implementation of the program which was introduced includes the following:**

1.The investigator gathered the general information about nurses participated in the study, and conducted the pretest of nurses´ and practice toward neonatal hypoglycemia.

2. The instructional program was implemented and presented in(3) sessions. Because of difficult of collection the sample at one time, the sample divided to sub group according to the hospitals and working shaft. Each session presented to the study sample about (3) times took about (60 minutes).

Statistical Data Analysis:

The statistical analysis of the data of the study is done by using Microsoft office excel 2010 and SPSS package ver. 20.

Results and Discussion

Discussion of the Distribution of the Nurses by Their Demographic Characteristics

Regarding to the nurses' demographic characteristic in **table (1).** The finding indicated that (52.5%) of nurses at age (26-30) years. In a descriptive study carried out in Mosul by Mohammed, & Alsawaf, (2016) 4(Assessment of Nursing staff's Knowledge and Practice regarding Care of Premature Babies in Mosul Teaching Hospitals), they found that the nurses age between 20-29 years. Regarding to nurses gender, all of them are females. Mohammed, & Alsawaf, (2016)4 found that all of nurses working in NICU were females. This finding consisted with our finding. This finding due to most of nurses working in gyno and pediatric hospital were female.

Regarding to educational level, (42.5%) of nurses have nursing bachelor graduated. In interventional study carried out in Sudan by El hag, & Bassyonie, (2019)8 (Effect of the training program on nurses' practice regarding premature nursing care in Pediatric Teaching Hospital Wad Medani, Gezira state, Sudan), they found that most of nurses had bachelor graduated in nursing. This result agree with our finding.

Regarding to the years of service of nurses, (77.5% & 100%) of nurses have (1-5) years of service in nursing and in NICU , many studies were found that most of nurses had (1-5) years of service in nursing and in NICU. This finding agree with the present study result [5][4][8].

Regarding to participating in training session related to hypoglycemia in neonate, (17.5% & 2.5%) of nurses have participate in (1-2 &3-4) training session, study in Iraq was found that most of nurses had participate in training session related care of neonate in NICU[4].

In Figure (1): the finding indicated that the improvement the nurses practice toward care neonates with hypoglycemia in the Posttest II .

According to finding in table **(2),** the nurses practice level toward care neonates with hypoglycemia is low in pretest. (100%) of nurses had low level of practice, the mean score is (1.25) in pretest. in posttest I (100%) of nurses had high level of practice and the mean score is (2.54), and at posttest II (82.5%) of nurses had high level of practice the mean score is (2.47), study in Baghdad city was found that at the pretest (75%) of nurses had poor practice about neonatal resuscitation and at posttest I (75%) of nurses had good level while, in the Posttest II (75%) of them had acceptable level of practice. This

finding consisted with the present study finding[9].

The study in Kirkuk City, Iraq was found that (80%) of nurses had acceptable level of performance to care of neonate after delivery. This finding supported our finding in the posttest I[5]. Some studies was found that all of the studied nurses (100%) had satisfactory level of practice related to weight, and one quarter (25%) of them had satisfactory level of practice related to skin care. This finding supported the present study finding in the Posttest I and Posttest II[4][10].

The point of view of the researcher related to the present study considers that the educational program has effect on the level of practice and support the researcher hypothesis.

Discussion of the Difference between Nurses Practice and Demographic Characteristics

According to the difference between nurses practice and age in **table (3),** the finding indicates that there is significant difference between nurses practices toward care neonates with hypoglycemia and their age at pretest. tow studies in Iraq and Egypt were found that there was no significant statistical relationship between nurses level of practices and their age [5][10].

According to the difference between nurses practice and level of education in **table (3),** the finding indicates that there is significant difference between nurses practices toward care neonates with hypoglycemia and their educational level at pretest and posttest II. Ramdan, Refat, & Mobarak, (2019) found that there was no significant relationship between nurses practices and level of education[10]. This result may be related to most of them had bachelor nursing graduated. The educational level of nurses may play a role in the results of any program which improve nurses´ practices.

According to the difference between nurses practice and years of service in nursing in **table (3),** the finding indicates that there is no significant difference between nurses practices toward neonates with hypoglycemia and their years of service in nursing at pretest, post-I and post-II. This finding related to most of nurses had few years of experience in nursing field and in NICU and lack of training sessions and workshops about the neonatal hypoglycemia.

According to the difference between nurses practices and marital status in **table (3),** the finding indicates that there is no significant difference between nurses practices toward neonates with hypoglycemia and their marital status at pretest, post-I and post-II. This result due to the mean score of nurses practice regarding marital status of the single, married and other are in same level, therefore no found any different between them in the mean score at p value (0.05)

Researcher view find the results of the study logically because of most participate in the study was low level of practices toward neonates with hypoglycemia before implementation of health educational program on the study group, after implantation program the nurses practices become well toward care neonates with hypoglycemia in post-I and post-II.

Finally, sample size plays important role in the results to represent the population and correlation between variables. Also statistical tests are in need to a large sample size to represent the population well..

Table (1) Distribution of the nurses by their demographic characteristics

Variables		Frequency	Percent
Age	(20 – 25)	15	37.5
	(26 – 30)	21	52.5
	(31 – 35)	4	10
	Total	40	100
Gender	Female	40	100
	Total	40	100

Cont... **Table (1) Distribution of the nurses by their demographic characteristics**

Level of education	Nursing High School	16	40.0
	Nursing Institute	7	17.5
	Nursing College	17	42.5
	Total	40	100.0
Years of service in nursing	1-5	31	77.5
	6-10	8	20.0
	11-15	1	2.5
	Total	40	100
Years of service in NICU	1-5	40	100
	6-10	-	-
	Total	40	100
Marital status	Single	14	35.0
	Married	24	60.0
	Other	2	5.0
	Total	40	100
Participatin in training session related to NICU	Nor training session	32	80
	(1-2) training session	7	17.5
	(3- 4) training session	1	2.5
	Total	40	100

Table (2): Distribution the nurses practice toward neonatal hypoglycemia Levels of Assessment Through the "Mean of Score" Among the Period of the Program (Pre, Post I and post II)

Period	Level of Assessment	Frequency	Percent
Pre-test	Low (1-1.66)	40	100
	Moderate (1.67-2.33)	-	-
	High (2.34-3)	-	-
	Total	40	100
	$\acute{x} \pm S.D$	1.25±0.087	
Posttest I	Low (1-1.66)	-	-
	Moderate (1.67-2.33)	-	-
	High (2.34-3)	40	100
	Total	40	100
	$\acute{x} \pm S.D$	2.54±0.097	
Posttest II	Low (1-1.66)	-	-
	Moderate (1.67-2.33)	7	17.5
	High (2.34-3)	23	82.5
	Total	40	100
	$\acute{x} \pm S.D$	2.47±0.154	

$\dot{x} \mp S.D.$=Arithmetic Mean ($\dot{x}$ and Std. Dev. (S.D.)

Table (3): Distribution and difference of nurses practice with demographic characteristics

Variable	Practice test periods		
Age	**Pre-test**	**Post- I test**	**Post II test**
(20 – 25)	F =8.055 d.f.=39 P =0.001	F =0.066 d.f.=39 P =0.937	F =0.839 d.f.=39 P =0.44
(26 – 30)			
(31 – 35)			
Mean ± S.D.	1.25±.087	2.54±0.097	2.47±0.154
Education	Pre-test	Post- I test	Post II test
Graduate Nursing High School	F =7.902 d.f.=39 P =0.001	F =0.031 d.f.=39 P =0.969	F =5.241 d.f.=39 P =0.01
Graduate Nursing Institute			
Graduate College Of Nursing			
Mean ± S.D.	1.25±.087	2.54±0.097	2.47±0.154
Years of service in nursing	Pre-test	Post- I test	Post II test
1-5	F =1.443 d.f.=39 P =0.249	F =0.594 d.f.=39 P =0.557	F =1.112 d.f.=39 P =0.594
6-10			
11-15			
Mean ± S.D.	1.25±.087	2.54±0.097	2.47±0.154
Marital status	Pre-test	Post- I test	Post II test
Single	F =0.041 d.f.=39 P =0.96	F =0.048 d.f.=39 P =0.953	F =0.457 d.f.=39 P =0.637
Married			
Other			
Mean ± S.D.	1.25±.087	2.54±0.097	2.47±0.154

S.D.=Standard deviation, ANOVA= Analysis of Variance, F = Fisher test, d.f. = degree of freedom, P = probability value, NS: Non Significant at P > 0.05, S: Significant at P < 0.05, HS: Highly Significant at P < 0.01.

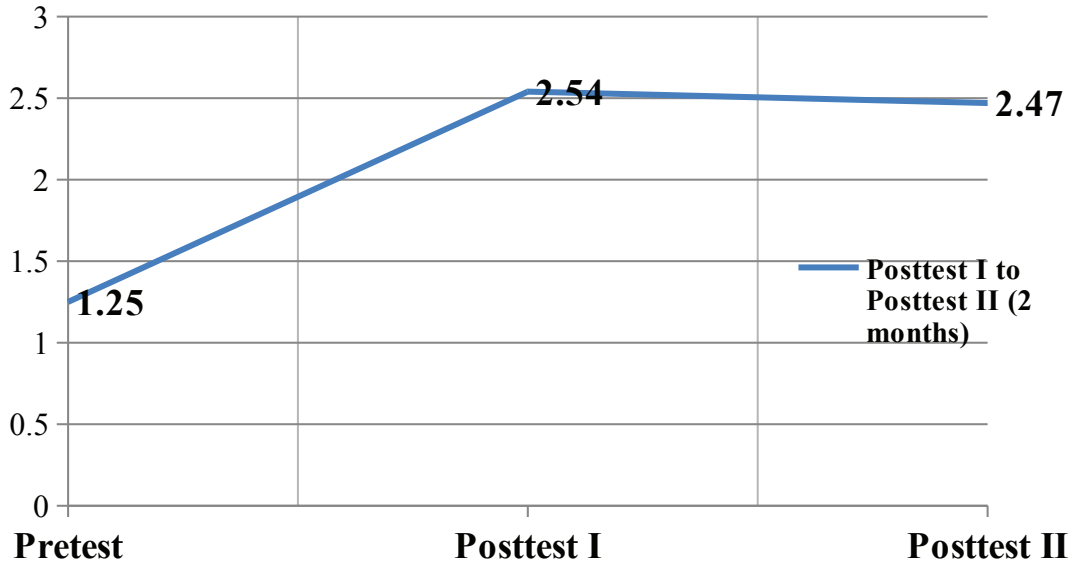

Figure -1- Distribution of nurses practice according to mean score in the pretest, posttest I and posttest II

Conclusions

1.Nurses practices toward neonatal hypoglycemia is poor in assessment.

2.The nurses practices toward neonatal hypoglycemia has been improved after implementation of the educational program, which reveal that effectiveness of the provided program was highly beneficial.

3.The program has effectiveness on the nurses' level of practice toward neonatal hypoglycemia during the 2 period of test, the study group have low level of practice before implementation of an educational program and the level of practice ascend to high level at posttest I and stay in high level at posttest II.

4. There is a significant deference between the means of the nurses practice before and after implementation of the program.

Recommendations

1. The study found that nurses' practices toward neonates with hypoglycemia had improved significantly. As a result, the researcher suggested that an educational program be introduced in all Iraqi pediatric hospitals.

2. Nurses' training session on how to care for a neonate with hypoglycemia.

Follow-up and evaluation of nurses' neonatal care practices in the NICU.

3. The researcher suggests that nurses' practices be assessed on a regular basis to identify any flaws that may be affecting their care of neonates with hypoglycemia.

4. The importance of fully utilizing continuing medical education to provide neonatal hypoglycemia courses for all NICU nurses.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

Funding: Self-funding

References

1. Tin W. Defining neonatal hypoglycaemia: a continuing debate. InSeminars in Fetal and Neonatal Medicine 2014 Feb 1 (Vol. 19, No. 1, pp. 27-32). WB Saunders.
2. Cranmer, H. Neonatal Hypoglycemia. Medescape. https://emedicine.medscape.com/article/802334-

overview, (2020).

3. Kumar, J. T., Vaideeswaran, M., & Seeralar, A. T. Incidence of hypoglycemia in newborns with risk factors. Int J Contemp Pediatr. 2018. 5(5):1952-1955
4. Mohammed QN, Alsawaf BF. Assessment of Nursing staff's Knowledge and Practice regarding Care of Premature Babies in Mosul Teaching Hospitals. Mosul Journal of Nursing. 2016 Jun 1;4(2):70-3.
5. Y Mustafa D, Al–Mukhtar SH. Evaluation of Knowledge and Practice of Nursing Staff Regarding Immediate Care after Birth in Kirkuk City Hospitals. Mosul Journal of Nursing. 2015 Aug 28;3(2):81-6.
6. Halse K, Fonn M, Christiansen B. Health education and the pedagogical role of the nurse: Nursing students learning in the clinical setting.
7. Bryant R, Rodgers C, Stone S. Enhancing pediatric oncology nursing care through research, quality improvement, and evidence-based practice. Journal of Pediatric Oncology Nursing. 2013 May;30(3):123-8.
8. El hag, F., & Bassyonie, BEffect of the training program on nurses' practice regarding premature nursing care in Pediatric Teaching Hospital Wad Medani, Gezira state, Sudan (2016-2018). IJMHR . 2019. 5(5), 21-25
9. Khudair, S. H. Impact of training neonatal resuscitation program upon nurses practices in operation room in Baghdad city. Doctorate dissertation. College of nursing Baghdad university. 2012. 82
10. Ramdan AA, Refat NH, Mobarak AA. Assessment of Nursing Practice Regarding Neonates with Hyperbilirubinemia. Assiut Scientific Nursing Journal. 2019 Dec 1;7(19):52-60.