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Effect of the training program on nurses' practice regarding premature nursing care in Pediatric Teaching Hospital Wad Medani, Gezira state, Sudan (2016-2018)

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Abstract
Introduction: Premature infant had a greater chance of complications which lead to death. The world health organization (WHO) reported that out of 130 million live births every year, 4 million die within the first four weeks of life. Of these deaths 99% occur in developing countries against 1% in developed countries.
Objective: This study aimed at assessing the effect of training program on nurses' practice regarding premature nursing care in Pediatric Teaching Hospital.
Methodology: This is an interventional hospital based study including all available nurses (101) during the period of the study from (February to April 2017).
Results: The study results evident that Among of 101 of nurses participate in the present study was show: that: that: 40.6% of the study sample at the level of bachelor's degree, 19.8% of them their years of experience ranged from 6 – 10 years & 14.9% of the study sample attended training program before(Figure1,2&3). The mean of the total percentages of nurses' performance regarding maintenance of temperature of premature infant was 39.6% before the training program and it was improved to 84.1% after the program (4.10). The mean of the total percentages of nurses' performance regarding maintenance of fluid of premature infant was 33.4% before the training program raised to91.4 % after (4.11). The mean of the total percentages of nurses' performance regarding skin care of premature infant was 25.8% before the training program improved to 85.1% after (4.12). The mean of the total percentages of nurses' performance regarding maintenance of nutrition of premature infant was 21% before the training program and it was improved to 79.4 % after the program (4.13). The mean of the total percentages of nurses' performance regarding prevention of neonatal infection was 29.5% before the training program and it was improved to 80.3 % after the program (4.14).

Keywords: premature, care of premature knowledge and skills, nursing, Sudan

1. Introduction
Admissions of neonatal intensive care units (UICUs) were high risk newborns, had a greater chance of complications because of conditions that occur during fetal development, pregnancy conditions of the mother, or problems that might occur during labor and birth. The neonatal death rate on national level, like that of other developing countries is very high. The NICUs are critical to premature newborns and to the well-being of the infants with malformations and acute complications of the newborn period [1].
Over the past 20 years, care of infants and children has become extremely technical. It is generally assumed that newborns with a term birth weight, more than 2500 g will thrive at birth. However, many infants are born each year with birth weights lower than 2500 g or who are ill at birth and do not thrive. Such infants are regularly transferred to a neonatal intensive care units or intensive care nursery (ICN) [2].
The world health organization (WHO) estimates that birth weight below 2500g indirectly contributes to about 15% of the neonatal mortality, ranging from 6% in high income countries to 30% in low income countries, with preterm birth and related complications being the underlying cause. The world health organization (WHO) reported that out of 130 million live birth every year, 4 million die within the first four weeks of life. Of these deaths 99% occur in developing countries (Approximately half following difficult deliveries at home) against 1% in developed countries [3].
Rapid advances in our understanding of the pathophysiology of the neonate and increased capacity to apply this knowledge have emphasized the need for appropriate settings in which to care for the seriously ill infant. Intensive care of the ill and immature newborn requires specialized knowledge and skill in a number of areas. Much of the equipment long used in the care of the critically ill adult is unsuited to the singular needs of the very small infant; therefore common place apparatuses have been modified to meet these needs. Examples of modification include ventilators that deliver small volumes of oxygen in the proper concentration and pressure, infusion pumps that deliver very small amounts accurately, and radiant heat warmer that provide a constant source of warmth. Most important advances in intensive care have created a need for highly skilled personnel trained in the art of neonatal intensive care [4].
Nurses in the neonatal care units should be highly trained in the management of variety of sophisticated mechanical devices and educated in the infant's behavior, interpreting observations of others and timing interventions

appropriately. Proficiency is developed through daily observation and practice under the guidance of skilled practitioner- in-service education is one of the prime objectives in the ongoing management of successful Neonatal Intensive Care Unit (NICU) [5].

The national association of neonatal nurses was created over the last ten years to bring the world together. This forum provides an opportunity for neonatal nurses and midwives everywhere to network, exchange ideas and experiences about neonatal care throughout the world. The purposes of the Neonatal Nurses Association include the promotion of good standards of neonatal nursing for the benefit of babies, their families and the nurses involved in their care. The neonatal nurses Association have developed regular links with other national organizations representing neonatal nurses both in Europe and elsewhere in the world.

2. Material and Methods

An intervention cross sectional pediatrics hospital based study. Aimed to assess the effect of the Training Program on Nurses' skills regarding premature Nursing Care in Pediatric Teaching Hospital Wad Medani, Gezira State, Sudan which. The study population included all available nurses who working in neonatal care units in Pediatric Teaching Hospital, Gezira State, Sudan during the period between (February to April 2017) were included in the study. The sample size consisted of (101) of nurses from the neonatal care units were selected as total coverage, nurses meet the inclusion criteria were included in the study nurses who working in neonatal care units in Pediatric Teaching hospital, during the period of study with their different qualifications. The nurses were exclude from the study if they are working in other departments of the hospital, Nurses under training and Nurses' students

The date was collected used checklist designed by researcher for monitoring nurses 'performance when caring of premature babies such as, vital signs and thermo regulation of premature infant, daily neonatal care, Kangaroo mother care, right position and care regarding incubator, fluid regulation and the problem of premature infant, premature feeding, and observation of danger signs of premature infant. This tool was used to measure the nurses' skills before and after the training program to evaluate the effect of the training program on their skills. Analysis was performed by statistical package for social sciences (SPSS). To approval and establishment of study the researcher take letter from the faculty of nursing sciences to director of the hospital. Verbal consent from interviewed persons was also taken after explaining the study and its objectives to them. Confidentiality was given consideration and the information is used for the research purpose only.

3. Results

The study results evident that Among of 101 of nurses participate in the present study was show: that: that: 40.6% of the study sample at the level of bachelor's degree, 19.8% of them their years of experience ranged from 6 – 10 years & 14.9% of the study sample attended training program before (Figure 1, 2 & 3).

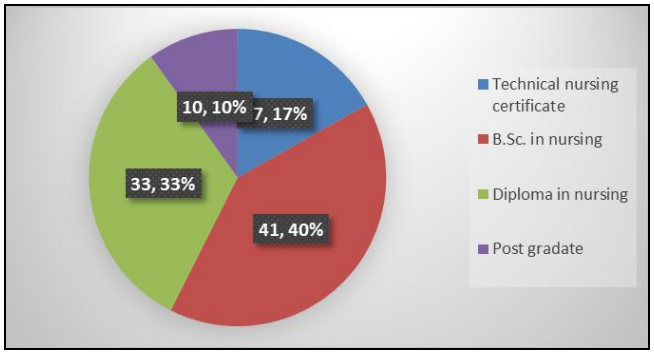

Fig 1: Distribution of the study sample according to their educational level.

Figure 1: shows that 40.6% of the study sample at the level of bachelor's degree

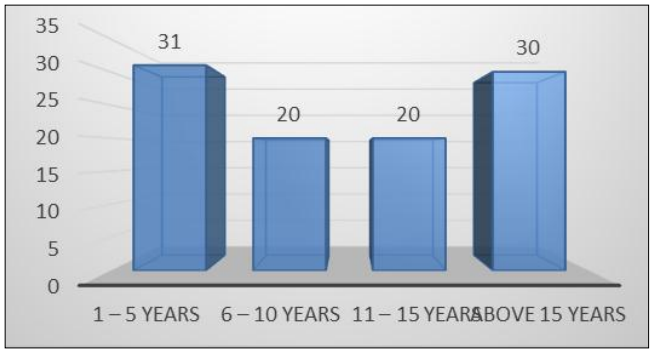

Fig 2: Distribution of the study sample according to their years of experiences

Figure 2: 19.8% of them their years of experience ranged from 6 – 10 years.

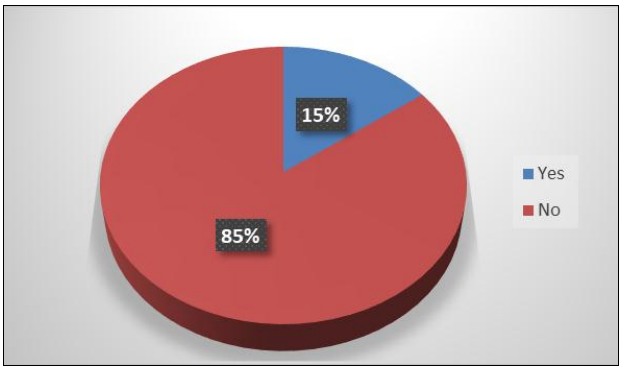

Fig 3: Distribution of the study sample according to their attending training program about premature Nursing Care before

Figure 3: 14.9% of the study sample attended training program about premature Nursing Care before.

The mean of the total percentages of nurses' performance regarding maintenance of temperature of premature infant was 39.6% before the training program and it was improved to 84.1% after the program (1). The mean of the total percentages of nurses' performance regarding maintenance of fluid of premature infant was 33.4% before the training program raised to 91.4 % after (2). The mean of the total

percentages of nurses' performance regarding skin care of premature infant was 25.8% before the training program improved to 85.1% after [3]. The mean of the total percentages of nurses' performance regarding maintenance of nutrition of premature infant was 21% before the training program and it was improved to 79.4 % after the program [4]. The mean of the total percentages of nurses' performance regarding prevention of neonatal infection was 29.5% before the training program and it was improved to 80.3 % after the program [5].

Table 1: Distribution of the study sample according to their performance regarding maintenance of temperature of premature infant:

Items	Before								After							
	Done correctly		Done incorrectly		Not done		Total		Done correctly		Done incorrectly		Not done		Total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
1. Monitoring and recording of temperature	41	40.6	49	48.5	11	10.9	101	100	89	88.1	9	8.9	3	3.0	101	100
2. Pre-warming of incubator before placing an infant in it	50	49.5	44	43.6	7	6.9	101	100	92	91.1	7	6.9	2	1.9	101	100
3. Establishment of kangaroo mother care	25	24.8	45	44.6	31	30.6	101	100	70	69.3	26	25.7	5	4.9	101	100
4. Rubbing of infant warm blanket when removed from the incubator	49	48.5	37	36.6	15	14.9	101	100	86	85.1	12	11.9	3	3.0	101	100
5. Warming of everything that come into with the infant	35	34.7	53	52.5	13	12.8	101	100	88	87.1	9	8.9	4	4.0	101	100

Table 2: distribution of the study sample according to their performance regarding maintenance of fluid of premature infant

Items	Before								After							
	Done correctly		Done incorrectly		Not done		Total		Done correctly		Done incorrectly		Not done		Total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
1. Insertion of intravenous catheter	21	20.8	8o	79.2	0	0.0	101	100	101	100.0	0	0.0	0	0.0	101	100
2. Insertion of feeding tube	30	29.7	55	54.5	16	15.8	101	100	89	88.1	12	11.9	0	0.0	101	100
3. Delivery of fluid by infusion pump	25	24.8	76	75.2	0	0.0	101	100	101	100.0	0	0.0	0	0.0	101	100
4. Regulation of infusion rates	35	34.7	63	62.4	3	2.9	101	100	98	97.0	2	1.9	1	1.9	101	100
5. Calculation of infants' intake and output	39	38.6	51	50.5	11	10.9	101	100	90	89.1	7	6.9	4	4.0	101	100
6. Weighing of the infant	69	68.4	19	18.8	13	12.8	101	100	88	87.1	10	9.9	3	3.0	101	100
7. Documentation	17	16.8	62	61.4	22	21.8	101	100	79	78.2	15	14.9	7	6.9	101	100

Table 3: Distribution of the study sample to their Performance regarding skin care of premature infant

Items	Before								After							
	Done correctly		Done incorrectly		Not done		Total		Done correctly		Done incorrectly		Not done		Total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
1. Infants bath	25	24.8	33	32.8	43	42.6	101	100	68	67.3	23	22.8	10	9.9	101	100
2. Changing of diaper	24	23.8	36	35.6	41	40.6	101	100	80	79.2	18	17.8	3	3.0	101	100
3. Removal of disinfectants from the skin after invasive procedure	12	11.9	89	88.1	0	0.0	101	100	99	98.0	2	2.0	0	0.0	101	100
4. Security of items to the skin	37	36.6	49	48.5	15	12.9	101	100	89	88.1	9	8.9	3	3.0	101	100
5. Changing of position	32	31.7	47	46.5	22	21.8	101	100	94	93.1	6	9.5	1	1.0	101	100

Table 4: Distribution of the study sample according to their Performance regarding maintenance of nutrition of premature infant

Items	Before								After							
	Done correctly		Done incorrectly		Not done		Total		Done correctly		Done incorrectly		Not done		Total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
1. Explain the benefits of breast feedings	13	12.9	39	38.6	49	48.5	101	100	72	71.3	26	25.7	3	3.0	101	100
2. Helping mothers in maintaining lactation	17	16.8	29	28.7	55	54.5	101	100	66	65.4	28	27.7	7	6.9	101	100
3. Demonstration of gavages feeding	21	20.8	27	26.7	53	52.5	101	100	82	81.2	13	12.9	6	5.9	101	100
4. Measuring of abdominal girth	26	25.7	42	41.6	33	32.7	101	100	88	87.1	9	8.9	4	4.0	101	100
5. Recording of head circumference – length	29	28.7	44	43.6	28	27.7	101	100	93	92.1	5	4.9	3	3.0	101	100

Table 5: Distribution of the study sample according to their Performance regarding prevention of neonatal infection

Items	Before								After							
	Done correctly		Done incorrectly		Not done		Total		Done correctly		Done incorrectly		Not done		Total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
1. Proper hand washing and scrubbing before and after handling babies	18	17.8	83	82.2	0	0.0	101	100	88	87.1	10	9.9	3	3.0	101	100
2. Wearing of sterile gown before entering the baby care unit	5	4.9	79	78.2	17	16.8	101	100	94	93.1	3	3.0	1	1.0	101	100
3. Using special or over shoes before entering the unit	59	58.4	1	1.0	41	40.6	101	100	80	79.2	17	16.8	4	4.0	101	100

4. Using of mask	13	12.9	45	44.6	43	42.6	101	100	88	87.1	11	10.9	2	2.0	101	100
5. Wearing of goggles	0	0.0	0	0.0	101	100	101	100	0	0.0	0	0.0	101	100	101	100
6. Using aseptic technique for invasive procedures	44	43.6	47	46.5	10	9.9	101	100	91	90.1	7	6.9	3	3.0	101	100
7. Usage of separate and disposable belongings for each infant	15	14.9	78	77.2	8	7.9	101	100	94	93.1	6	5.9	1	1.0	101	100
8. Maintenance of general cleanliness of baby and his surroundings	37	36.6	55	54.5	9	8.9	101	100	92	91.1	5	4.9	4	4.0	101	100
9. Encouragement of exclusive breast feedings	32	31.7	53	52.5	16	15.8	101	100	85	84.2	10	9.9	6	5.9	101	100
10. Disposal of needles	75	74.3	24	23.8	2	1.9	101	100	99	98.0	2	2.0	0	0.0	101	100

4. Discussion

As regard the respondents' performance concerning maintenance of temperature of premature infant Table (1) revealed that Monitoring and recording of temperature, Rubbing of infant warm blanket, and warming of everything that comes into with the infant. revealed that (40.6%, 48.5%, and34.7%) of nurses practices Monitoring and recording of temperature Rubbing of infant warm blanket, and warming of everything that come into with the infant before the training program, improved to (88.1% 85.1%, and 87.1%) after implementation of the program. This result was inconsistent with [6] in her study aimed at assessing nurses' knowledge and practice regarding nursing management of premature babies in NICU at Soba University hospital Khartoum she reported that, 100% of her study sample were checked the temperature correctly as a routine care.

Regarding the nurses' performance concerning kangaroo mother care revealed that, (24.8%) before the training program, improved to (69.3%) after. These results were consistent with [7]. In their study aimed at evaluating the impact of neonatal nurse's guidelines on improving their knowledge, attitude and practice toward KMC at Mansura University Children Hospital, they reported that, neonatal nurses' guidelines were very effective on improving their knowledge toward KMC and provide valuable insights into the highly specialized NICU environment. Hospital supported for the mothers is needed to facilitate and continues early initiation of KMC through allowing the mother to visit her premature infants' all of the time without restrictions Regarding Insertion of intravenous catheter, Delivery of fluid by infusion pump, and regulation of infusion rates table [2] revealed that (20.8%,24.8% and 34.7%) of nurses practices Insertion of intravenous catheter, Delivery of fluid by infusion pump, and regulation of infusion rates before the training program, improved to (100%, 100% and 97%) respectively after implementation of the program. These results were inconsistent with [8] in her study aimed at assessing nurses' knowledge, attitude and practice regarding care of high risk neonates at NICUs of pediatric and maternity of hospital of AinShams, Egypt, she reported that, more than half of her nurses were competent regarding practices related to high risk neonates.

As regard to. Calculation of infants' intake and output, Weighing of the infant, Infants bath and changing of diaper table (2&3) it found that (38.6%, 68.4%, 24.8%, and 23.8%) of nurses practices Calculation of infants' intake and output, Weighing of the infant, Infants bath and changing of diaper before the training program, improved to (89.1%, 87.1%, 67.3% and 79.2%) after implementation of the program. This results is compatible with [9] in her study aimed at assessing the effect of developmentally supportive care training program on nurses' performance during tub bath provided for neonates in NICU at Benha specialized pediatric hospital Egypt. She reported that, there was highly statistically significance differences between the means of the total score of the nurses' performance regarding tub bath for newborn infants before and after application of developmentally supportive care program, nurses' who received the DSC program at a higher knowledge score and improved level of performance during newborn infant's tub baths, the continuing education of the staff in NICU are vital to improve the quality of care provided for newborn infants.

As regards nurses' practice about Removal of disinfectants from the skin after invasive procedure, Security of items to the skin and changing of position of premature infant table [3], the current study stated that nurses' performance in regard to Removal of disinfectants from the skin after invasive procedure, Security of items to the skin and changing of position were (11.9%, 36.6 % and 31.7%) respectively before intervention and it were improved to 98%, 88.1% and93.1% after intervention. This result is compatible with [9] in her study aimed at assessing the effect of developmentally supportive care training program on nurses' performance during tub bath provided for neonates in NICU at Benha specialized pediatric hospital Egypt. She reported that, there was highly statistically significance differences between the means of the total score of the nurses' performance regarding tub bath for newborn infants before and after application of developmentally supportive care program, nurses' who received the DSC program at a higher knowledge score and improved level of performance during newborn infant's tub baths, the continuing education of the staff in NICU are vital to improve the quality of care provided for newborn.

As regard to preterm nutrition, benefits of breast feedings, Helping mothers in maintaining lactation and Demonstration of gavages feeding for Preterm newborn were (12.9%, 16.8% and 20.8%) before the program respectively raises to (71.3%, 65.4% and 81.2%) after. Table (4-1) Some of this findings is consistent with (6) who reported that, majority of her study group were practiced nasogastric tube insertion and weighing of the newborns correctly.

Preterm infants have a lowered resistance to infection. Safety precautions should be strictly enforced to prevent infections in NICU. Table (5) showed distribution of the nurses according to their performance regarding prevention of neonatal infections. There were statistically significant improvement of nurses' practice and activity toward prevention of infection of premature infant the mean of nurses' performance was 29.5%. Before the program raised to 80.3% after. This results compatible with [10] in her study which aimed at assessing knowledge and practices of nurses working in NICUS toward neonatal care in Kirkuk and Hawler cities, she reported that, there were knowledge gap and lack of practices performance related to some statements exist among nurses in the locality concerning

neonatal care [11] added that, nursing personnel should be provided with in-service education training in relation to care of neonates.

5. Conclusions and Recommendations

The study concluded that there was a significant improvement in nurses' practice regarding premature care after the training program. So the study recommended that continuing training program for nurses about premature care must be done.

6. References

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