

# Assessment of Neonatal Nurse' Knowledge and Practice about Sudden Infant Death Syndrome Risk Reduction

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**Abstract:** Sudden Infant Death Syndrome was the leading cause of death in infant between 1 month and 1 year of age SIDS was the leading cause of death in infancy period. Nurses and other medical personnel play critical roles in prevention and control of infant death syndrome. The aim of the current study was to assess the neonatal nurses' knowledge and practice about prevention of sudden infant death syndrome at El Shatby Maternal and Child Hospital. The study utilized a descriptive research design. The study was conducted in the NICU at Maternity & Children Hospital in Alexandria on a sample consisted of 115 nurses and neonates. The required data was collected using the following tools, structured interview sheet to assess the basic characteristics of the nurses and neonates as well the nurses' knowledge about SIDS, and the second tool is observational checklist to assess the nurses' practice regarding prevention of sudden infant syndrome. The study results revealed that less than three quarters of nurses have good knowledge about SIDS and around three quarters of them had competent practices. It was recommended that changes within the hospital setting are necessary to create a culture of evidence-based practice among nurses regarding SIDS prevention practices.

**Keywords:** neonatal nurses, knowledge, practice SIDS and safety sleep recommendations.

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## 1. INTRODUCTION

Sudden Infant Death Syndrome (SIDS) is the sudden, unexplained death of an infant younger than 1 year of age that remains unexplained after a complete investigation; this investigation can include an autopsy, a review of the death scene, and complete family and medical histories. (Willinger, M., James, L. S., & Catz, C, 2015). The majority (90%) of SIDS deaths occur before a child is 6 months old, with most happening between 1 month and 4 months of age. (American Academy of Pediatrics, 2011). SIDS are more likely to be vulnerable infants as those born prematurely, exposed to cigarette smoke and to have had risk factors present at last sleep such as the presence of soft and loose bedding. Moreover, some of the anatomic, genetic and biochemical anomalies more often found in SIDS cases than in infant deaths to other causes have the capacity to render infants more susceptible to these common environmental risk factors (Moon RY; Taskforce on SIDS, 2016).

Nurses and other medical personnel play critical roles in parental education. Furthermore, the way infants are positioned for sleep in the hospital has been shown to strongly influence parental practice at home. SIDS reducing strategies are typically introduced to parents by bedside nurses as part of routine newborn care or by clinicians during well child visits. However, there is a disjunction between SIDS prevention measures and their implementation by nurses and physicians involved in the care of neonates (Gelfer P, et al., 2013).

**Significance of the study:**

Approximately 3500 infants die annually in the United States from sleep-related infant deaths, including sudden infant death syndrome and accidental suffocation and strangulation in bed (**American academy of pediatrics, 2011**). SIDS was the leading cause of death in infant between 1 month and 1 year of age in 2013 (**Heron, M., 2016**).

The American Academy of Pediatrics (AAP) defines standard guidelines for infant positioning and sleep environment to reduce the rate of sudden infant death syndrome (SIDS), but recent data on nurses' knowledge and adherence to these guidelines in hospital settings are limited.

**Aim of study:**

Assessment of neonatal nurse' knowledge and practice about sudden infant death syndrome risk reduction at El Shatby Maternal and Child Hospital.

**Research question:**

What are the nurse knowledge and practice levels about prevention of sudden infant death syndrome?

## 2. SUBJECTS AND METHOD

**Study design:**

Descriptive research design was utilized to conduct the current study.

**Setting:**

The study was conduct in Neonatal Intensive Care Units (NICU) at Maternity & Children Hospital in Alexandria.

**Sample:**

The study sample consisted of all neonatal nursing staff working in Neonatal Intensive Care Units (NICU) at Maternity & Children Hospital in Alexandria, they accounted 115 nurses.

In addition to a convenient sample of neonates corresponding to the nurses, they will comprise 115 neonates.

**Tools:** In order to collect the necessary data for the study three tools were used:

**Tool (I): Nurses' knowledge about prevention of sudden infant syndrome structured interview schedule:** It was developed by the researchers to collect the necessary data. It included three parts:

**First part: Nurses' socio-demographic data:** It included the age, level of education, years of experience, and previous training about neonatal emergency management.

**Second part: Nurses' knowledge about prevention of sudden infant syndrome:** It contained 18 statements about definition of SID, risk factors, causes, and measures of prevention. Responses to each statement were incorrect, somewhat correct/complete or correct/complete. A correct complete answer was scored as (2), somewhat correct/complete was scored as (1), but the scoring of incorrect was (0). The total score was generated by summing up the scores from all statements. The resultant total score ranges from 0-36 where as those having a score of 0- 21 (less than 60%) were considered poor knowledge, and those with a score of 22-26 were considered fair knowledge (60% to less than 75%), while those with good knowledge have a score ranges from 27 to 36 (75% and more).

**Third part: Neonates' baseline data** such as gestational age, weigh at birth and sex.

**Scoring system:**

**Tool (II): Nurses' practice regarding prevention of sudden infant syndrome structured observation checklist:** It was adapted from (AAP recommendations, 2011) for safe sleep and SIDS risk reduction to assess safety sleep practices. The check list consisted of 6 items. Responses to each statement were incorrect, somewhat correct/complete or correct/complete. A correct complete answer was scored as (2), somewhat correct/complete was scored as (1), but the scoring of incorrect was (0). The total score was generated by summing up the scores from all statements. The resultant total score ranges from 0-12 where as those having a score of 0- 9 (less than 80%) were considered incompetent, and those with a score of 10-12 were considered competent (80% and more).

**Method:**

- Approval of responsible authorities was obtained through official letters from the Faculty of Nursing.
- Meetings were held with the directors of the selected settings to clarify the purpose of the study and to gain their cooperation and support during data collection.
- Tool (I) was developed by the researchers after reviewing the recent relevant literature. It was validated by juries of (5) experts in the field. Their suggestions and recommendations were taken into consideration.
- Cronbach Alpha Coefficient was used to ascertain the reliability of tool (I) and (II), ( $r = 0.86$  for tool I and  $0.82$  for tool II).
- Pilot study was carried out on 12 nurses who were randomly chosen from El Ramal hospital which were not included in the sample in order to ascertain the relevance, clarity and applicability of the tools, test wording of the questions and estimate the time required for the interview. Based on the obtained results, the necessary modifications were done.
- Data was collected by the researchers during the period from September 2019 to December 2019.
- **Ethical considerations:**
  - Informed oral consents were obtained from the nurses after brief explanation of the purpose and nature of the research.
  - The anonymity and confidentiality of responses, voluntary participation and right to refuse to participate in the study were emphasized to the nurses. The researcher explained the objectives of the study to the participants.
  - The approval from the research committee to conduct the study were obtained.
- **Statistical analysis:**

After data were collected, they were coded and transferred into specially designed formats so as to be suitable for computer feeding. Following data entry, checking and verification processes were carried out to avoid any errors during data entry, frequency analysis, cross tabulation and manual revision were all used to detect any errors. The statistical package for social sciences (SPSS version 20) was utilized for both data presentation and statistical analysis of the results. The level of significance selected for this study was P equal to or less than 0.05.

### 3. RESULTS

**Table (1)** reveals that more than half (55.7%) of the neonates were female, while the rest (44.3%) were males. Furthermore, less than two thirds (64.3%) of the neonates had a gestational age of 35 weeks and more, while, 5.2% of them had less than 25 weeks of gestation. Additionally, the mean birth weight of the neonates was  $2.317 \pm 0.613$  and around one tenth (10.4%) of them weighted 3 and more kg at birth.

**Table (2)** shows that 6.1% of the nurses aged between 20 to less than 25 years and one fifth (20.0%) of them aged 35 years and more with a mean of  $30.27 \pm 4.519$ . Moreover, only 0.9% of the nurses were technical nurses, while 49.6% of them were either staff nurses or professional nurses with the same percentage. Furthermore, less than one tenth (7.8%) of them had less than 5 years of experience compared to less than one quarter (23.5%) of them had 15 years of experience and more with a mean of  $11.496 \pm 4.471$ . It was noticed that less than three quarters (73.0%) of the nurses had previous training about management of neonatal emergencies.

**Table (3)** portrays that the majority (80.0%) of the nurses had a good knowledge about definition of SIDs, while more than two thirds (69.6%) of them had a good knowledge about its risk factors compared to less than three quarters (72.2%) of them who had good knowledge about the causes of SIDs. Additionally, more than two thirds (69.6%) of the nurses had good knowledge about preventive measures of SIDs. Lastly, less than two thirds (73.0%) of the nurses had good total knowledge level, and one fifth (20.0%) had fair level and only 7.0% of them had poor knowledge level regarding SIDs.

**Table (4)** indicates the nurses' practice concerning prevention of SIDs. It was noticed that more than half (58.3%) didn't sleep the neonate in supine position while more than two thirds (67.0%) of them used prone position during neonates' sleep. With respect to blanket used for swaddling, less than two thirds (60.9%) of the nurses used two blankets compared

to more than three quarters (79.1%) of them who used two blankets for heating. Additionally, less than half (48.7%) of the nurses used firm surface for neonates' sleep. Furthermore, the majority (80.0%) of the nurses teach the parents on discharge about safety sleep practice recommendations.

**Figure (1)** shows that more than three quarters (75.7%) of the studied nurses had competent safety sleep practice about prevention of SIDS.

**Table (5)** shows the relationship between the nurses' level of knowledge and their basic characteristics as well their caring neonates' characteristics.

Concerning the nurses' age, it was found that the majority (87.0%) of the nurses aged 35 years and more had good knowledge level compared to 14.3% of those nurses aged less than 25 years with a statistically significant relation between the nurses' age and their knowledge level ( $X^2= 53.607$ ,  $P= 0.000$ ). Furthermore, the majority (90.7%) of the professional nurses had good knowledge compared to less than two thirds (60.3%) of staff nurses including those graduates from secondary school of nursing and those from technical institute of nursing, with a statistically significant relationship between the nurses' educational qualifications and their knowledge level ( $X^2= 9.586$ ,  $P= 0.008$ ).

The same table, reveals that less than one quarter (22.2%) of those nurses with less than 5 years of experience had good knowledge level compared to the majority (81.5%) of the nurses with 15 years of experience and more with a statistically significant relationship between the nurses' years of experience and their knowledge level ( $X^2= 25.566$ ,  $P= 0.000$ ). Additionally, the majority (85.7%) of the nurses who reported previous training about management of neonatal emergencies had good knowledge level compared to 38.7% of those who had no previous training, with a statistically significant relationship between the nurses' previous training about management of neonatal emergencies and their knowledge level ( $X^2= 25.416$ ,  $P= 0.000$ ).

With respect to neonatal characteristics, it was noticed that 76.5% of the nurses who care for male neonates compared to 70.3% of those who care for female neonates had good knowledge about prevention of SIDs. Furthermore, two thirds (66.7%) of the nurses who care for neonates with less than 25 weeks of gestation compared to the majority (83.8%) of those who care for neonates with 35 weeks of gestation and more with statistically significant relationship between the neonates' gestational age and the nurses' knowledge level ( $X^2= 22.799$ ,  $P= 0.001$ ). Additionally, there is a statistically significant relationship between the neonates' birth weight and the nurses' level of knowledge ( $X^2= 30.576$ ,  $P= 0.000$ ) where all (100.0%) of the nurses who care for less than 1 kilogram birth weight neonates compared to more than half (58.3%) of those nurses who care for 3 kilogram and more weight neonates had good knowledge level.

**Table (6)** portrays the relationship between the nurses' level of practice and their basic characteristics as well their caring neonates' characteristics.

It was noticed that the majority (87.0%) of the nurses aged 35 years and more had competent practice compared to 28.6% of those nurses aged less than 25 years with a statistically significant relation between the nurses' age and their practice level ( $X^2= 10.316$ ,  $P= 0.016$ ). Furthermore, the majority (86.0%) of the professional nurses had competent practice compared to 65.5% of staff nurses, with a statistically significant relationship between the nurses' educational qualifications and their practice level ( $X^2= 6.526$ ,  $P= 0.011$ ).

Moreover, one third (33.3%) of those nurses with less than 5 years of experience had competent practice compared to the vast majority (96.3%) of the nurses with 15 years of experience and more with a statistically significant relationship between the nurses' years of experience and their practice level ( $X^2= 44.536$ ,  $P= 0.000$ ). Furthermore, the majority (86.9%) of the nurses who reported previous training about management of neonatal emergencies had competent practice compared to less than half (45.2%) of those who had no previous training, with a statistically significant relationship between the nurses' previous training about management of neonatal emergencies and their practice level ( $X^2= 21.421$ ,  $P= 0.000$ ).

With respect to neonatal characteristics, it was found that 80.4% of the nurses who care for male neonates compared to 71.9% of those who care for female neonates had competent practice about prevention of SIDs. Additionally, one third (33.3%) of the nurses who care for neonates with less than 25 weeks of gestation compared to 79.7% of those who care for neonates with 35 weeks of gestation and more with statistically significant relationship between the neonates'

gestational age and the nurses' practice level ( $X^2 = 14.156$ ,  $P = 0.003$ ). Lastly, there is a statistically significant relationship between the neonates' birth weight and the nurses' level of practice ( $X^2 = 12.140$ ,  $P = 0.007$ ) where all (100.0%) of the nurses who care for less than 1 kilogram birth weight neonates compared to half (50.0%) of those nurses who care for 3 kilogram and more weight neonates had competent practices.

**Table (7)** illustrated that, there is a moderate statistical significance relation between total nurses' knowledge scores with their practice scores  $P = 0.000$ .

#### 4. DISCUSSION

Sudden infant death syndrome (SIDS) remains the third leading cause of infant death in the United States and the leading cause of death. In 2011, the American Academy of Pediatrics (AAP) released new recommendations for safe sleep. As regard nurses' level of education figure (1) 49.6% of the nurses graduated from bachelor degree and diploma respectively while 0.9% of them graduated from institute nursing. This study in contrast with Barsman et al., (2015) she found in her a study about Neonatal Nurses' Beliefs, Knowledge, and Practices in Relation to Sudden Infant Death Syndrome Risk-Reduction Recommendations the majority of nurses (70%) working in either unit were bachelors. Regarding to the nurses knowledge, the result of the current study revealed that most of the studied nurses (104) had correct answer about a baby shares a bed with a caregiver who has been smoking, the risk of SIDS and other sleep-related causes of infant death In large epidemiological studies of SIDS, it seems that sleeping in the parents' room without bed sharing confers the least risk, compared with sharing a sleep surface (most risk) and sleeping in another room (intermediate risk) Horne R. (2019) also found that sharing a couch to sleep is associated with an increased risk of SIDS, and sleeping in the same room is associated with a lower risk compared with sleeping in a separate room.

Preterm or low birth weight regardless of parental smoking status even for breastfed infants, there is an increased risk of SIDS when bed-sharing if younger than 4 months. This appears to be a particularly vulnerable time, so if parents choose to feed their infants younger than 4 months in bed, they should be especially vigilant to not fall asleep. Nearly two third of the studied nurses had correct answer about Pacifier use at bedtime decreases the risk of SID. Research has found that the use of a pacifier decreases the incidence of SIDS through such mechanisms as helping maintain a patent airway and facilitating the maturation of the mouth and neck muscles used during sucking and breathing Marinelli K, Ball H, McKenna J, Blair P; (2019). However, a societal trend of abstaining from pacifier use has persisted as a result of a previous link between use and reduced breastfeeding duration Boyer M, Walton P (2019). Pacifiers should thus be introduced at sleep times after an infant has developed and maintained a pattern of successful latching during breastfeeding, a period that should not extend more than 3 to 4 weeks after breastfeeding initiation (De Luca, F., Gómez-Durán, Arimany- Manso, J 2017). The most recent published research, however, has found that pacifier use does not interfere with breastfeeding instead; easy access to formula may be the biggest deterrent (Jaafar SH.et al., 2012 & Kair LR. et al., 2013).

As regard safety sleep practice, the current study illustrated those Findings regarding the typical positioning of preterm and full-term infants in the NICU show that there are a variety of positions used by the nurses surveyed. The rationale for each position was not requested, limiting the interpretation of this survey. However, it is alarming that the use of supine alone (the position currently recommended as safest) was reported by only 48% of nurses caring for preterm infants. The finding of this study in the line with Kair LR. et al., 2013 who found in her study about NICU nurses' knowledge and discharge teaching related to infant sleep position and risk of SIDS use of supine alone (the position currently recommended as safest) was reported by only 5% of nurses caring for preterm infants. In full-term infants, nurses reported that only 40% are typically positioned supine and that the side-lying position.

Malloy MH (2013) stated that the supine sleep position does not increase the risk of choking and aspiration in infants, even those with gastro esophageal reflux, because infants have airway anatomy and mechanisms that protect against aspiration. Preterm infants should be placed supine as soon as possible. More than half of the studied nurses in our study used Keep Soft Objects and Loose Bedding out of the Crib. Maged M, Rizzolo D (2018) stated that Soft objects, such as pillows and pillow-like toys, quilts, comforters, sheepskins, and loose bedding, such as blankets and non-fitted sheets, can obstruct an infant's nose and mouth. An obstructed airway can pose a risk of suffocation, entrapment, or SIDS.

More than half of the studied nurses in our study used firm sleep surface. De Luca, F., Gómez-Durán, Arimany- Manso, J(2017) stated that infants should be placed on a firm sleep surface and covered by a fitted sheet with no other bedding or soft objects to reduce the risk of SIDS and suffocation. A firm surface maintains its shape and will not indent or conform to the shape of the infant's head when the infant is placed on the surface. A soft mattress, including those made from memory foam, could create a pocket (or indentation) and increase the chance of re-breathing or suffocation if the infant is placed in or rolls over to the prone position. Soft materials or objects, such as pillows, quilts, comforters, or sheepskins, even if covered by a sheet, should not be placed under a sleeping infant. If a mattress cover to protect against wetness is used, it should be tightly fitting and thin.

As regard parents discharge information, the current study found that most of the nurses educate parents on discharge about safe sleep practices based on AAP recommendations related to SIDS risk reduction AAP, (2011) stated that newborn nursery staff should educate and model AAP recommendations from birth and well before discharge home. Research shows that parents are most likely to practice SIDS prevention behavior when they are taught correct behavior in conjunction with seeing it modeled by nurses (Maged M, Rizzolo D 2018). Furthermore, the results of the current study reveal that the older, professional nurses' as well those who reported previous training about prevention and management of neonatal emergencies had good knowledge and practice levels. The same findings were reported by De Luca, F., Gómez-Durán, Arimany- Manso, J (2017). These finding shed the light about importance of regular trainings, so as to ensure that healthcare personnel deliver the latest evidence-based care especially among the junior staff nurses.

## 5. CONCLUSION

The current study concluded that less than three quarters of nurses have good knowledge about SIDS and around three quarters of them had competent practices. Additionally, nurses' age, educational qualification, years of experience, previous training about neonatal emergencies as well the neonate's weeks of gestation and birth weight were correlated with the nurses' knowledge and practices.

## 6. RECOMMENDATIONS

1. Trainings about SIDS and its risk factors are highly recommended, and should especially target staff junior nurses.
2. Application of evidence-based Guidelines for prevention and proper management of neonatal emergencies including SIDS.

**Table (1): Distribution of the Neonate based on their Baseline Characteristics.**

Neonates' characteristics	Total N=115	
	No	%
<b>Sex</b>		
- Male	51	44.3
- Female	64	55.7
<b>Gestational Age (weeks)</b>		
- < 25	6	5.2
- 25-	8	7.0
- 30-	27	23.5
- ≥35	74	64.3
Mean ± SD	34.85 ±4.187	
<b>Birth weight (kg)</b>		
- < 1	1	0.9
- 1-	31	27.0
- 2-	71	61.7
- ≥3	12	10.4
Mean ± SD	2.317 ±0.613	

Table (2): Distribution of the Nurses based on their Baseline Characteristics.

Nurses' characteristics	Total N=115	
	No	%
<b>Age</b>		
- 20-	7	6.1
- 25-	51	44.3
- 30-	34	29.6
- ≥35	23	20.0
Mean ± SD	30.27 ±4.519	
<b>Educational qualifications</b>		
- Secondary School of Nursing Diploma	57	49.6
- Technical Institute of Nursing Diploma	1	0.9
- Bachelor Degree of Nursing	57	49.6
<b>Years of experience</b>		
- < 5	9	7.8
- 5-	30	26.1
- 10-	49	42.6
- ≥15	27	23.5
Mean ± SD	11.496 ±4.471	
<b>Previous training about management of neonatal emergencies</b>		
- Yes	84	73.0
- No	31	27.0

Table (3): Distribution the Nurses based on their knowledge level about SIDS

Items	Level of Nurses' knowledge					
	Poor		Fair		Good	
	No	%	No	%	No	%
- Definition	5	4.3	18	15.7	92	80.0
- Risk factors	9	7.8	26	22.6	80	69.6
- Causes	12	10.4	20	17.4	83	72.2
- Preventive measures	7	6.1	28	24.3	80	69.6
<b>Total Nurses' knowledge</b>	8	7.0	23	20.0	84	73.0

Table (4): Distribution of the Nurses according to Safety Sleep Practice.

Item		Done		Not Done	
		No.	%	No.	%
<b>Position</b>	<b>Supine</b>	48	41.7	67	58.3
	<b>Prone</b>	77	67.0	38	33.0
	<b>Right lateral</b>	56	48.7	59	51.3
	<b>Left lateral</b>	45	39.1	70	60.9
<b>Blankets in use for swaddling</b>	<b>0</b>	19	16.5	96	83.5
	<b>1</b>	55	47.8	60	52.2
	<b>2</b>	70	60.9	45	39.1
<b>Other Blankets on infant (for heating)</b>	<b>0</b>	42	36.5	73	63.5
	<b>1</b>	27	23.5	88	76.5
	<b>2</b>	91	79.1	24	20.9
<b>Keep Soft Objects and Loose Bedding out of the Crib:</b>	<b>Blankets</b>	68	59.1	47	40.9
	<b>Loose diapers</b>	20	17.4	95	82.6
<b>Firm Sleep Surface</b>		56	48.7	59	51.3
<b>Patient discharge information includes sleep position and AAP recommendations related to SIDS risk reduction</b>		92	80.0	23	20.0

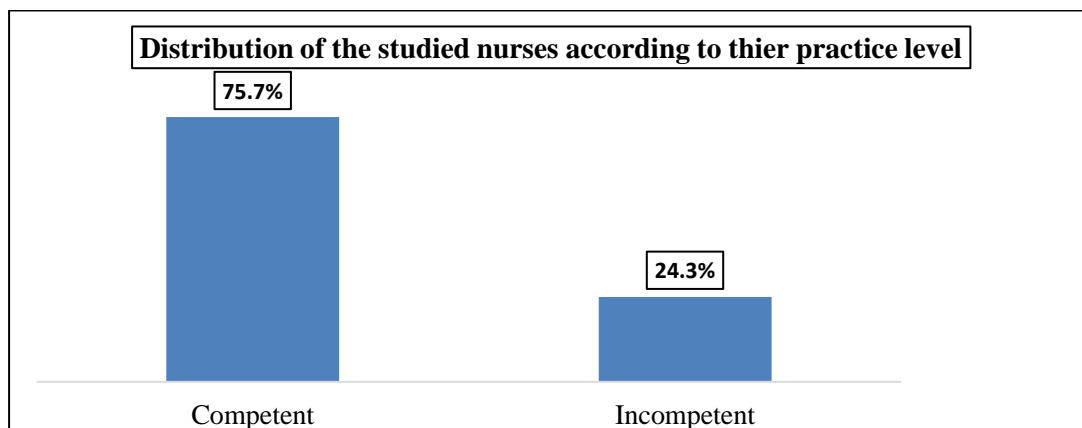


Figure (1) Distribution of studied nurses according to their total practice

Table (5): Relation between the nurses' levels of knowledge and their basic data and neonates' basic data:

Items	Levels of Knowledge about SIDs						Total (n=115)		Test of significance
	Poor (n=8)		Fair (n=23)		Good (n=84)		No	%	
	No	%	No	%	No	%			
<b>Nurses' characteristics</b>									
<b>Age</b>									
- 20-	5	71.4	1	14.3	1	14.3	7	6.1	X <sup>2</sup> = 53.607 P= 0.000*
- 25-	1	2.0	13	25.5	37	72.5	51	44.3	
- 30-	2	5.9	6	17.6	26	76.5	34	29.6	
- ≥35	0	0.0	3	13.0	20	87.0	23	20.0	
<b>Job qualifications</b>									
- Staff nurse	6	10.3	17	29.3	35	60.3	58	50.4	X <sup>2</sup> = 9.586 P= 0.008*
- Professional nurse	2	3.5	6	10.5	49	90.7	57	49.6	
<b>Years of experience</b>									
- < 5	4	44.4	3	33.3	2	22.2	9	7.8	X <sup>2</sup> = 26.566 P= 0.000*
- 5-	2	6.7	8	26.7	20	66.7	30	26.1	
- 10-	1	2.0	8	16.3	40	81.6	49	42.6	
- ≥15	1	3.7	4	14.8	22	81.5	27	23.5	
<b>Previous training about management of neonatal emergencies</b>									
- Yes	3	3.6	9	10.7	72	85.7	84	73.0	X <sup>2</sup> = 25.416 P= 0.000*
- No	5	16.1	14	45.2	12	38.7	31	27.0	
<b>Neonates' characteristics</b>									
<b>Sex</b>									
- Male	4	7.8	8	15.7	39	76.5	51	44.3	X <sup>2</sup> = 1.104 P= 0.576
- Female	4	6.3	15	23.4	45	70.3	64	55.7	
<b>Gestational age</b>									
- < 25	1	16.7	1	16.7	4	66.7	6	5.2	X <sup>2</sup> = 22.799 P= 0.001*
- 25-	3	37.5	2	25.0	3	37.5	8	7.0	
- 30-	2	7.4	10	37.0	15	55.6	27	23.5	
- ≥35	2	2.7	10	13.5	62	83.8	74	64.3	
<b>Birth weight (kg)</b>									
- < 1	0	0.0	0	0.0	1	100.0	1	0.9	X <sup>2</sup> = 30.576 P= 0.000*
- 1-	3	9.7	13	41.9	15	48.4	31	27.0	
- 2-	1	1.4	9	12.7	61	85.9	71	61.7	
- ≥3	4	33.3	1	8.3	7	58.3	12	10.4	

N.B Professional nurses (Bachelor degree), Staff nurses (technical and secondary school nurses)

X<sup>2</sup> Chi square test

\* Significant p at ≤0.05



Table (6): Relation between the nurses' levels of practice and their basic data and neonates' basic data:

Items	Levels of Practices about SIDs				Total (n=115)		Test of significance
	Incompetent (n=28)		Competent (n=87)		No	%	
	No	%	No	%			
<b>Nurses' characteristics</b>							
<b>Age</b>							
- 20-	5	71.4	2	28.6	7	6.1	X <sup>2</sup> = 10.316 P= 0.016*
- 25-	11	21.6	40	78.4	51	44.3	
- 30-	9	26.5	25	73.5	34	29.6	
- ≥35	3	13.0	20	87.0	23	20.0	
<b>Job qualifications</b>							
- Staff nurse	20	34.5	38	65.5	58	50.4	X <sup>2</sup> = 6.526 P= 0.011*
- Professional nurse	8	14.0	49	86.0	57	49.6	
<b>Years of experience</b>							
- < 5	6	66.7	3	33.3	9	7.8	X <sup>2</sup> = 44.536 P= 0.000*
- 5-	18	60.0	12	40.0	30	26.1	
- 10-	3	6.1	46	93.9	49	42.6	
- ≥15	1	3.7	26	96.3	27	23.5	
<b>Previous training about management of neonatal emergencies</b>							
- Yes	11	13.1	73	86.9	84	73.0	X <sup>2</sup> = 21.421 P= 0.000*
- No	17	54.8	14	45.2	31	27.0	
<b>Neonates' characteristics</b>							
<b>Sex</b>							
- Male	10	19.6	41	80.4	51	44.3	X <sup>2</sup> = 1.118 P= 0.290
- Female	18	28.1	46	71.9	64	55.7	
<b>Gestational age</b>							
- < 25	4	66.7	2	33.3	6	5.2	X <sup>2</sup> = 14.156 P= 0.003*
- 25-	5	62.5	3	37.5	8	7.0	
- 30-	4	14.8	23	85.2	27	23.5	
- ≥35	15	20.3	59	79.7	74	64.3	
<b>Birth weight (kg)</b>							
- < 1	0	0.0	1	100.0	1	0.9	X <sup>2</sup> = 12.140 P= 0.007*
- 1-	12	38.7	19	61.3	31	27.0	
- 2-	10	14.1	61	85.9	71	61.7	
- ≥3	6	50.0	6	50.0	12	10.4	

N.B Professional nurses (Bachelor degree), Staff nurses (technical and secondary school nurses)

X<sup>2</sup> Chi square test \* Significant p at ≤0.05

Table (7): Correlation between the nurses' total knowledge and total practice scores

Items	Total Knowledge	
Total Practice	r	0.674
	P	0.000

r = Pearson correlation \* Significant p at ≤0.05

r ≥0.7 high correlation r 0.5-<0.7 moderate correlation r < 0.5 low correlation

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