

Assessment of Nurses' Documentation Skills in Neonatal Intensive Care Units

Wafaa Hamdy El Khateeb¹, Prof. Dr. Randa Mohamed Adly², Assist. Prof. Dr. Bothayna Nader Sadk³

¹B.s.c, Benha University, ²Professor Pediatric Nursing Department, Faculty of Nursing, Ain Shams University, ³Assistant Professor of Pediatric Nursing, Faculty of Nursing, Ain Shams University

Abstract

Background: Documentation is a fundamental nursing responsibility with professional, legal and financial ramification. **Aim:** This study aimed to assess the nurses' documentation skills in neonatal intensive care unit through assessing nurses' knowledge and practices toward the documentation and assessing nurses' attitude toward documentation in neonatal intensive care units. **Research design:** descriptive study. **Setting:** The study was conducted at Neonatal Intensive Care Units at Maternity and Gynecological Hospital and Pediatric Hospital affiliated to Ain Shams University Hospitals and Said Galal Hospital affiliated to Al-Azhar University hospitals. **Subjects:** A purposive sample the subject of the study included of nurses (60) and purposive sample of neonates (60) who admitted in NICU in the previously mentioned settings. **Tools:** four tools were used: First tool, Structured questionnaire format: to assess nurses' knowledge as regard to documentation skills. Second tool, neonates' assessment sheet. Third tool, Standardized frame for documentation skills for common neonatal problems. Fourth tools, nurses' attitude regarding documentation skills in NICU. **Results:** The mean age of the studied nurses was 26.5±5.91 years. Regarding educational qualification, 53.3% of studied nurses had nursing technical institute education. In relation to mean years of experience in neonatal intensive care, the mean was 6.62±2.87 years. Three quarters of nurses had no attendance of previous training courses in nursing documentation. There is a statistically significant relation between total knowledge of the studied nurses and their socio-demographic characteristics (age, educational qualification and years of experience in NICUs). There is a statistically significant relation between total practice of the studied nurses and their socio-demographic characteristics (age, educational qualification and years of experience in NICUs). There is a statistically significant relation between total attitude of the studied nurses and their educational qualification. **Conclusion:** More than half of nurses had satisfactory knowledge regarding documentation skills in NICUs. The majority of nurses had positive attitude regarding documentation skills in NICUs. More than half of nurses had competent practices regarding documentation skills in NICUs. There is a highly statistically significant positive correlation between total nurses' knowledge, attitude and practice. **Recommendations:** In-service education for upgrading nurses' skills toward documentation in neonate intensive care units. Further research studies are needed for ongoing assessment of nurses including large sample for generalization of results.

Key words: Documentation Skills, Neonatal Intensive Care Units.

Corresponding author: Wafaa Hamdy El Khateeb -**Mobile:** 01122322973 -**Email:** wafaahamdy926@gmail.com

Introduction

Throughout the development of modern nursing, a variety of documentation systems has emerged in response to changes inherent in health care delivery. Changes in consumer and legal expectations, accreditation standards, and research findings direct provider accountability for the documentation of services. Systems to recording and reporting data pertinent to the care of neonates have evolved primarily in

response to the demand for health care practitioners to be held accountable to societal norms, professional standards of practice, legal and regulatory standards, and institutional policies and standards (Safey El- Din, 2014).

Documentation is a nursing action that produces a written and/or electronic account of pertinent neonates data, nursing clinical decisions and interventions, and the neonates's responses in a health record. Documentation is

an integral part of professional nursing and safe practice. Nursing documentation is a vital component of safe, ethical and effective nursing practice, regardless of the context of practice or whether the documentation is paper-based or electronic (Potter et al., 2017).

Clear, accurate, and accessible documentation is an essential element of safe, quality and evidence-based nursing practice. Nurses practice across settings at position levels from the bedside to the administrative office; Nurses are responsible and accountable for the nursing documentation that is used throughout an organization (American Nurses Association, 2014).

Documentation of nurses' work is critical as well for effective communication with each other and with other disciplines. It is how nurses create a record of their services for use by payors, the legal system, government agencies, accrediting bodies, investigators, and other groups and individuals directly or indirectly involved with health care. Also, it provides a basis for demonstrating and understanding nursing's contributions both to neonates' outcomes and to the viability and effectiveness of the organizations that provide and support quality neonates care (O'Daniel & Rosenstein, 2018).

Effective nursing documentation reduces inefficiencies and decreases the probability of medical errors. It helps in clinical-decision making for improved neonates care, thereby helping to reduce health care costs. In addition, it affects financial reimbursement as third party payers evaluate documentation in neonates record to determine whether payment is appropriate (Okaisu et al., 2014).

High quality documentation is a necessary and integral aspect of the work of neonatal nurses. It requires sufficient time and resources to support documentation activities. At a time when accessing, generating, and sharing information in health care is rapidly changing, it is particularly important to articulate and reinforce principles that are basic to effective documentation of nursing services (American Nurses Association, 2014).

Neonatal Intensive care unit (NICU) as one of the important units needs the fast and accurate performance and care of nurses (Moyen et al., 2014). NICU nurses must have the ability to document the best nursing record which indicates a complete and accurate care, and all standard and acceptable nursing intervention (Cartwright-Vanzant, 2014).

Significance of the study

The Egyptian nurse is a victim of nursing service problem, shortage of human and material resources in addition to high workload. Information from the health record is often used to evaluate professional practices during quality improvement processes, such as performance reviews, chart audits, accreditation, legislated inspections and board reviews. Individual nurses can use outcome information or information from a critical incident to reflect on their practices and make needed changes based on the evidence. In Egypt incompetent nurse fails to give quality care as well as fails to be a caring employee (Safey El- Din, 2014). Thus it is important to assess nurses' documentation skills in neonatal intensive care units.

Aim of the work

Assess the nurses' documentation skills in neonatal intensive care unit. This study aimed to assess the nurses' documentation skills in neonatal intensive care unit through assessing nurses' knowledge and practices toward the documentation and assessing nurses' attitude toward documentation in neonatal intensive care units.

Subjects and methods

Research Design: A descriptive analytical design was used to conduct this study.

Setting: The study was conducted at the Neonatal Intensive Care Units at Maternity and gynecological Hospitals and Children's Hospital affiliated to Ain Shams University Hospitals. Also, Said Gala Hospital affiliated to Al-Azhar University hospitals. Because it is large hospital that receives neonates from name the rural and urban area and has adequate number of neonates

Subject: A purposive sample of nurses n=(60) who are qualified in providing direct nursing care given for neonates and document the care given for neonates admitted in the previously mentioned settings regardless their qualification and years of experience the number of nurse of nurse in said galal hospital at nnicu(n=35) nurse. A purposive sample of neonates (n=60) who admitted in the Neonatal Intensive Care (NICU) in the previously mentioned settings. The common diagnoses were included in the study (prematurity, jaundice, Respiratory Distress Syndrome, and infant of diabetic mother).

Technical Design

Tools of data collection:

Data collection was obtained by using the following tools:

I-Structured Questionnaire format: It was developed by the investigator based on scientific updated literature review and it was written in simple Arabic language to suite level of nurses. includes the following parts:

Part (I): was concerned with demographic data of studied nurses which included age, level of education, years of experience and training program attainment.

Part (II): Nurses' knowledge as regard to documentation recommendation skills in neonatal intensive care unit it included:

- Types, important and purpose of documentation skills in Neonatal Intensive Care Unit (NICU).

- Characteristic of documentation in neonatal intensive care unit

- Factors affecting the documentation in neonatal intensive care unit.

- Nurses' knowledge regarding the documentation skills include (history, examination, treatment, admission, and discharge)

- Nurses knowledge regarding the documentation skills for neonates regarding the common diagnosis in NICU.

Scoring system: The right answer was scored one and that wrong was scored zero. These scores were summed-up and converted into a percent score.

▪ Score from < 75 referred to unsatisfactory level of knowledge.

▪ Score from $75 \leq 100$ referred to satisfactory level of knowledge.

Tool (2): Neonatal Assessment Sheet:-

To collect data about with data related to neonatal characteristics (age, gender, current weight. date of admission, gestational age, diagnosis, types of delivery, congenital defect and investigator format).

Tool (3): Standardized fram, for Documentation skills (appendix IV) for common neonatal problems (Prematurity, Jaundice, Respiratory Distress and Infant of Diabetic Mother) adopted form (**Egyptian ministry of health population and USAID, 2010**). This tool was adopted to assess the nurses' practices as regards the documentation skills for the common diagnosis in the study setting.

The right answer was scored one and that wrong was scored zero. These scores were summed-up and converted into a percent score.

▪ Score from < 75 referred to competent skills.

▪ Score from $75 \leq 100$ referred to in competent skills.

Tool (4) Nurses' Attitude rating scale regarding documentation skills in NICU Scale (Five Likert type scale): It consisted of (23) statements and nurses responses were categorized in to the following responses: (strongly agree, agree, uncertain, disagree and strongly disagree). The scoring system from 5 to 1 score, according to strongly agree has score 5, agree has score 4, uncertain has score 3, disagree has score 2 and strongly disagree has score 1. The maximum score was (115) and minimum (69). The score of items were summed-up and the total divided by number of the items, giving a mean score of the part. These

scores were converted into a percent score was classified as the following:

- Negative attitude < 60%
- Positive attitude \geq 60%

Operational Design

The operational design for this study consisted of three phases, namely preparatory phase, pilot study and fieldwork.

Preparatory phase:

A review of past and current literature covering the various aspect of research problem. It was done by using the available articles, periodicals, journals and text books to be acquainted with the research problem.

Pilot study:

Pilot study was carried out on 10% (N=6 nurses) of the studied nurses at the previously mentioned settings in order to test the applicability of the constructed tools and its clarity. The pilot has also served to estimate the time needed for each subject to fill in the study tools. According to the results of the pilot, no corrections and omissions of items were performed. The pilot participants were included in the main study sample.

Content Validity: It were ascertained by a group of experts of pediatric nursing and medicine (N=3) to gain their experiences and opinion's regarding the tools contents while a minor modification was done accordingly in the form of rephrasing for some statements.

Reliability: of the tool was tested to ensure that an assessment tools produce stable and consistent result over times. Reliability of the study tools was done by alpha Cronbach test for each tool (0.98).

Field work:

The actual field work of this study was carried out over 6 months period started from the beginning of August 2017 till the end of January 2018. The research was available by rotation in the study setting three days from Sunday to Tuesday in morning, after noon and night shift every three days in each study setting, the number of studied nurses 30 from each

hospital. Each nurse was interviewed individually to gather the necessary data of the study. The nurses were asked to give their responses according to the study tools. The required time to collect data from each nurse about 40 -50 minutes. While the researcher was observed the documentation skills of the given nursing can regarding the common diagnosis among the studied neonates.

Administrative design:

An official approval to carry out the study was obtained by the Dean of Faculty of Nursing Ain Shams University to general director of each hospital.

Ethical considerations:

Verbal approval was obtained from the nurses before inclusion in the study; a clear and simple explanation was given according to their level of understanding. They secured that all the gathered data was confidentiality and used for research purpose only.

The ethical research considerations include the following: The research approval was obtained from the faculty ethical committee before starting the study. The researcher was clarifying the objectives and aim of the study to nurses included in the study before starting. The researcher was assuring maintaining anonymity and confidentiality of subjects' data included in the study. The nurses informed that they are allowed to choose to participate or not in the study and they have the right to withdraw from the study at any time.

Statistical analysis

Data collected from the studied sample was revised, coded and entered using Computerized data entry and statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version 20. Data were presented using descriptive statistics in the form of frequencies, percentages. Chi-square test(X^2) was used for comparisons between qualitative variables and correlation coefficient (Spearman's rank test) was used to test

correlation between variables. Statistical significant was considered at p-value <0.05.

Results

Table (1) this table as regards the characteristics of the studied nurses shows that, the mean age of the studied nurses was **26.5±5.91**, regarding their educational qualification, it was found that more than half of them (**53.3%**) had nursing technical institute education. In relation to their years of nurses' experience in NNICU, the mean was **6.62±2.87**.

Table (2) concerning the characteristics studied neonates this table reveals that, the mean Chronological age of the studied neonates was 6.3 ± 3.65 days, the mean current weight was 2.54 ± 1.09 . Regarding gestational age of the studied neurosis, it was observed that more than one third of neonates (33.3%) had more than 36 weeks. and more than half of neonates (51.6%) were small for gestational age. Concerning their birth weight by Kg, it was found that the mean weight was 2.87 ± 1.15 .

Figure (1) As regards the common diagnosis among the studied neonates this figure indicated that, 45.0% of neonates had jaundice, 33.3% of them had respiratory distress, 28.3% of them had prematurity and 18.3% of them were infant of diabetic mother.

Table (3): In relation to purpose of nursing documentation, the majority of nurses had know that documentation facilitating communication between the nursing staff and the treated health team of the newborn neonates,

to promote good nursing care and linking the material incentive to good documentation (83.3%, 80.0% &80.0% respectively). Regarding to importance of nursing documentation for neonate, the majority of nurses had know about its reflects on the amount of nursing care provided to the neonates and considered nursing tasks in the unit care units (83.3% &80.0% respectively). Also, more than two thirds of nurses (71.7%) had total satisfactory knowledge regarding purpose and importance of nursing documentation in NICUs.

Table (4) shows that, two thirds of nurses (60.0%) had total done practice regarding documentation skills for hyperbilirubinemia. Meanwhile, more than one third of them (40.0%) had total not done practice. **Table (5)** Shows that, there is a statistically significant relation between total knowledge of the studied nurses and their socio-demographic characteristics (age, educational qualification and years of experience in NICUs) ($P < 0.05$). Whereas, satisfactory knowledge was more prevalent in age group of $30 < 35$, bachelor of nursing and other and years of experience of $10 < 15$ years in NICUs. Meanwhile, there is no statistically significant relation between total knowledge of the studied nurses and their attendance of previous training courses in nursing documentation ($P > 0.05$).

Table (6) indicated that, there is a highly statistically significant positive correlation between total nurses' knowledge, attitude and practices ($P < 0.001$).

Table (1): Number and percentage distribution of the studied nurses according to their socio-demographic characteristics (n=60).

Demographic characteristics	N	%
Age (years)		
<20	5	8.33
20 < 25	13	21.67
25 < 30	14	23.33
30 < 35	19	31.67
35 < 40	9	15.00
Range	18-38 years	
Mean±SD	26.5±5.91	
Educational Qualification		
Nursing Diploma	5	8.3
Nursing Diploma and Specialization	2	3.3
Nursing Technician Institute	32	53.3
Bachelor of Nursing and other	21	35.1
Years of experience in intensive care for newborns		
1 < 5	13	21.67
5 < 10	24	40.00
10 < 15	14	23.33
15 or more	9	15.00
Mean±SD	6.62±2.87	

Table (2): Number and percentage distribution of studied neonates according to their characteristics (n=60).

Neonates' characteristics	N	%
Chronological age (in days)		
1- <5	22	36.67
5- <10	29	48.33
10 or more	9	15.00
Range	2-14 days	
Mean±SD	6.3±3.65	
Current weight (in kgm)		
< 1000 gm	2	3.3
1000 < 1.500 gm	5	8.3
1500 < 2000 gm	15	25.0
2000 < 2500 gm	16	26.7
2500 < 3000 gm	22	36.7
Range	1.59-3.28kg	
Mean±SD	2.54±1.09	
Gestational age		
Less than 30 weeks	12	20.00
From 30 to less than 32 weeks	4	6.67
32 to 34 weeks	12	20.00
From 34 to less than 36 weeks	12	20.00
More than 36 weeks	20	33.33
Appropriate weight to gestational age		
Small for gestational age	31	51.67
Appropriate for gestational age	11	18.3
Large for gestational age	18	30.00
Birth weight (in kgm)		
Less than 1kg	0	0.0
From 1 to less than 1.5 k g	0	0.0
From 1.5 to less than 2 kg	16	26.67
From 2 to less than 2.5 kg	11	18.3
From 2.5 to less than 3 kg	12	20.00
More than 3000 kg	21	35.00
Mean±SD	2.87±1.15	

Figure (1): Percentage distribution of studied neonates according to their diagnosis the number is not mutually exclusive (n=60).

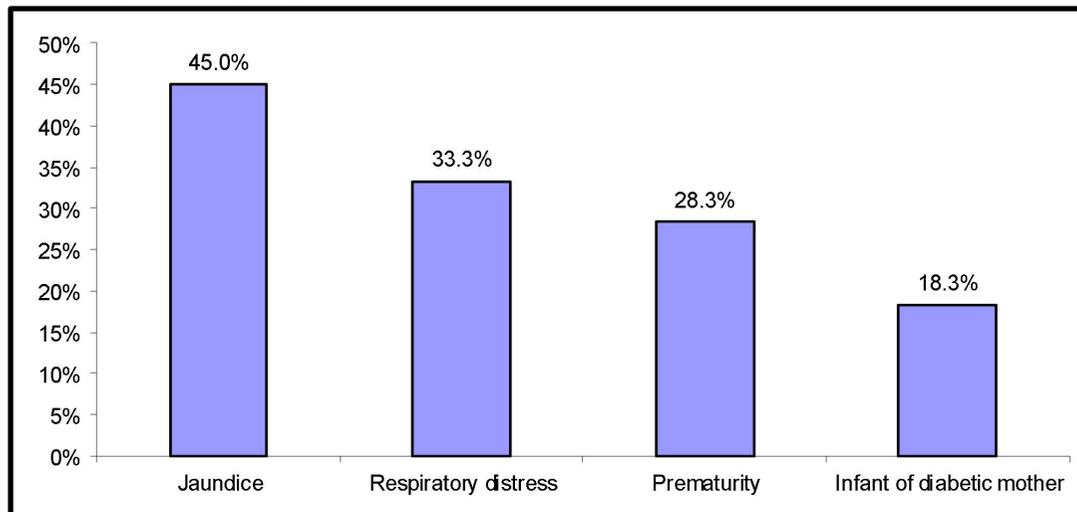


Table (3): Number and percentage distribution of studied nurses' according to their knowledge regarding purpose and importance of nursing documentation in NICUs (n=60).

Items	Yes		No	
	N	%	N	%
1- Purpose of nursing documentation				
facilitating communication between the nursing staff and the treated health team of the newborn child	50	83.3	10	16.7
Planning and developing a child care plan	41	68.3	19	31.7
Promote good nursing care	48	80.0	12	20.0
Conform to professional and legal standards	47	78.3	13	21.7
Measure adopt the quality of the place	46	76.7	14	23.3
Continuity of nursing care provided	44	73.3	16	26.7
Linking the material incentive to good documentation	48	80.0	12	20.0
2- Importance of documentation				
Reflects the amount of nursing care provided to the neonates	50	83.3	10	16.7
problems solving for neonates and nursing staff as well as hospitals	11	18.3	49	81.7
3-Considered nursing tasks in the units	48	80.0	12	20.0
Total	N		%	
Satisfactory	43		71.7	
Un Satisfactory	17		28.3	

Table (4): Number and percentage distribution of studied nurses' practices regarding documentation skills for hyperbilirubinemia (n=60).

Items	Done		Not Done	
	N	%	N	%
Case and File No.	60	100.0	0	0.0
Date of admission	60	100.0	0	0.0
Weight on admission	60	100.0	0	0.0
GA	50	83.3	10	23.3
History				
Recorded day of onset of jaundice	20	33.3	40	66.7
Maternal blood group	21	35.0	39	65.0
Other siblings affected	26	43.3	34	56.7
Examination				
Vital signs				
HR	24	40.0	36	60.0
RR	32	53.3	28	46.7
BP	26	43.3	34	56.7
Temp	54	90.0	6	10.0
Pallor	24	40.0	36	60.0
Nursing observation				
Plethora	34	56.7	26	43.3
Cephalhematoma or bruises	26	43.3	34	56.7
Lab investigations				
Bilirubin level (total direct)	16	26.7	44	73.3
Hb level	19	31.7	41	68.3
maternal and neonatal blood group and Rh	18	30.0	42	70.0
Hydration status daily	48	80.0	12	20.0
Neontal reflexes daily	22	36.7	38	63.3
Phototherapy				
Fluorocent Phototherapy	38	63.3	22	36.7
Led Phototherapy	0	0.0	60	100.0
Extensive Phototherapy	36	60.0	24	40.0
Hours of phototherapy	0	0	0	0
Exchange transfusion if indicated				
Amount	18	30.0	42	70.0
Time	30	50.0	30	50.0
Medication	26	43.3	34	56.7
Documentation for any observation	32	53.3	28	46.7
Total	36	60.00	24	40.00

Table (5): Relation between total knowledge of the studied nurses and their socio-demographic characteristics.

Socio-demographic characteristics	Satisfactory		Unsatisfactory		Total	Chi-square	
	N	%	N	%		X ²	P-value
Age (years)							
<20	2	40.0	3	60.0	5	11.374	0.023*
20 < 25	4	30.8	9	69.2	13		
25 < 30	8	57.1	6	42.9	14		
30 < 35	12	63.2	7	36.8	19		
35 < 40	9	100.0	0	0.0	9		
Educational Qualification							
Nursing Diploma	2	40.0	3	60.0	5	11.698	0.008*
Nursing Diploma and Specialization	0	0.0	2	100.0	2		
Nursing Technician Institute	15	46.9	17	53.1	32		
Bachelor of Nursing and other	18	85.7	3	14.3	21		
Years of experience in intensive care for newborns							
1 < 5	2	15.4	11	84.6	13	18.825	<0.001**
5 < 10	13	54.2	11	45.8	24		
10 < 15	11	78.6	3	21.4	14		
15 or more	9	100.0	0	0.0	9		
Attendance of previous training courses in nursing documentation							
Yes	11	73.3	4	26.7	15	1.851	0.174
No	24	53.3	21	46.7	45		

>0.05 Non significant <0.05* significant <0.001** High significant

Table (6): Correlation between total knowledge, total attitude and total practice of the studied nurses toward the documentation in the neonate intensive care units.

Socio-demographic characteristics	Total knowledge		Total attitude	
	r	P-value	r	P-value
Total attitude	0.408	<0.001**		
Total practice	0.381	<0.001**	0.359	<0.001**

>0.05 Non significant <0.05* significant <0.001** High significant

Discussion

Nursing documents are recorded information regarding patients' problems and interventions that conducted for obviating these problems. These documents are considered as a suitable written communication device. And despite of their basic role in improving and continuance of nursing and medical interventions provided for patients, transferring patients' information to other health team members, enhance professional autonomy, critical thinking skills of nurses, development of professional knowledge and nursing education, but the most important role of it is the legal aspect, because the best witness to show health

interventions provided for patients is a suitable and correct document (Ali et al., 2014).

Neonatal Intensive care unit (NICU) as one of the important, units needs the fast and accurate performance and care of nurses. Accurate and complete documentation of nursing records plays a significant role in providing the quality of nursing cares. The documented record of nurses is only legal document that describes the measures taken by the nurses for patients and is the best defense against the complaints of patients about the negligence of nurses in providing nursing cares. One of four neglected cares of nurses in neonates care is related to the mistakes in documenting the nursing records (Mohammad & Masudi, 2014).

The present study results revealed that, more than one third of nurses were in the age group of $30 < 35$ with mean age of the studied subjects was 26.5 ± 5.91 , more than half of them had nursing technical institute education, more than one third of nurses had $5 < 10$ years of experiences in intensive care for newborn with mean of 6.62 ± 2.87 and three quarters of them had no previous training courses in nursing documentation.

These findings were in accordance with **Hameed and Allo (2014)** who found that, in a study about Assessment of Nurses' Knowledge About Nursing Documentation, Iraq, more than one third of nurses were in the age group of 30-34 years and more than one third of them had more than 5 years – 10 years of experience. Also, these findings supported by **Dehghan et al. (2014)** who indicated that, in a study on Quality improvement in clinical documentation: does clinical governance work?, the majority of their studied nurses had no previous training courses in nursing documentation. In investigator's point of view, the common reasons for not attending the training sessions and workshops were that the scheduled times were inappropriate and that the nurses had to work their shifts; usually, sessions and workshops were scheduled during the morning shift, ie, from 8:00 AM until noon. Also, the nurses' shifts and their family requirements prevent their staying longer in the hospital.

Meanwhile, these findings contradicted with **Delnavaz et al. (2018)** who illustrated that, in a study on evaluating the quality of nursing documentation in pediatric wards of Motahari Hospital of Urmia in 2017, the most of their studied nurses had bachelor education.

The current study results clarified that, more than one third of neonates had $5 - < 10$ days with mean age of them was 6.3 ± 3.65 and more than one third of them had $2500 < 3000$ kg with mean current weight was 2.54 ± 1.09 . As regard to gestational age, more than one third of neonates had more than 36 weeks, more than half of them were small for gestational age and the mean of birth weight by Kg were 2.87 ± 1.15 . More than two thirds of neonates were male gender, more than two thirds of them were

delivered by section, the diagnosis for half of them was prematurity and more than three quarters had no congenital defects.

These findings supported by **Neghabadi et al. (2015)** who found that, in a study on Auditing phototherapy-related nursing care in neonatal general and intensive care units, Iran, The gestational age of 49.2% of the neonates and the postnatal age of 40% of them were respectively 37–39 weeks and 2–7 days. About 47.5% of them had a birth weight of 2000–2999 grams. Also, **Amin and Burnell (2015)** reported that, in a study on Monitoring Apnea of Prematurity: Validity of Nursing Documentation and Bedside Cardiorespiratory Monitor, New York, two thirds of neonates were males and no congenital anomalies were found.

The present study results showed that, three quarters of the nurses had satisfactory knowledge about types of documentation used in NICUs.

Two thirds of nurses had total satisfactory knowledge about personal factors contributing documentation in NICUs. More than two thirds of nurses had total satisfactory knowledge regarding work environment factors contributing documentation in NICUs.

These findings agreed with **Ehrerberg (2014)** who found that, in a study on nurses perception concerning neonates records in Swedish nursing homes, Sweden, the majority of participants realized that there are factors contributing documentation. Moreover, **Bjorvell et al. (2014)** stated that, in a study on Improving documentation using a nursing model, over 70% of nurses had factors affecting documentation.

The present study results indicated that, more than half of nurses had knowledge about accuracy of nursing documentation.

The current study results clarified that, more than three quarters of nurses had total satisfactory knowledge regarding importance of documentation of medical examination and neonates history. This finding contradicted with

Jasemi et al. (2017) who revealed that, in a study on Knowledge and Practice of Tabriz Teaching Hospitals' Nurses Regarding Nursing Documentation, Iran, there is a deficiency in nurses' knowledge regarding importance of documentation of medical examination and neonates history. Who revealed that, more than three quarters of nurses had total satisfactory knowledge regarding rules of documentation system and data obtained from nursing recording. This finding disagreed with **Stokke and Kalfoss (2014)** who illustrated that, in a study on structure and content in Norwegian nursing care documentation, nurses' knowledge about rules of documentation system and data obtained from nursing recording was deficient.

The present study results clarified that, more than two thirds of nurses had no knowledge about nursing documenting the admission and discharge of neonates from NICUs. This finding supported by **Taiye (2015)** who confirmed that, more than three quarters of respondents had no satisfactory knowledge related to documentation of admission nursing activities. Also, this finding was in consistent with **Blake-Mowatt et al. (2014)** who revealed that, more than one third of nurses had knowledge about documentation of discharge planning. Moreover, **Blair & Smith (2014)** stated that, more than two thirds of nursing notes were not written after the first day of admission of the neonates and these errors may prove fatal for nursing staffs and healthcare professionals from legal perspective.

The current study results showed that, more than two thirds of nurses had satisfactory knowledge about documentation skills of premature neonates. This finding contradicted with **Amin and Burnell (2015)** who stated that, nurses had a deficiency in their knowledge about documentation skills of premature problems.

The present study results indicated that, more than two thirds of nurses had satisfactory knowledge about documentation skills of jaundice, phototherapy and blood transfusion in neonates. These findings disagreed with **Graaf et al. (2015)** who found that, in a study on bedside practice of blood transfusion in a large teaching hospital in Uganda: An observational

study, documentation was limited or absent contributing directly to quality of neonates care concerning practice of blood transfusion. Also, these findings contradicted with **Neghabadi et al. (2015)** who confirmed that, nurses had a lack of knowledge about the documentation skills of jaundice and phototherapy.

The current study results illustrated that, more than half of nurses had satisfactory knowledge about respiratory distress (RDS syndrome) in neonates. This finding was in accordance with **Baker et al. (2017)** who stated that, in a study on routine dyspnea assessment and documentation: Nurses' experience yields wide acceptance, the most of nurses had good knowledge about documenting skills for respiratory distress.

The current study results revealed that, half of nurses had satisfactory knowledge about documenting skills for infant of diabetic mother. In investigator's point of view, DM is a common disease and public health problem in Egypt and its complications had a serious effects on neonates and adults, so nurses had good knowledge and keen in documentation of blood glucose levels,....etc

The present study results clarified that, more than half of nurses had total satisfactory knowledge about nurses' documentation skills in NICUs. This finding was consistent with **Gazanfari et al. (2015)** who revealed that, in a study on nurse's knowledge and practice of the principles of nursing documentation at hospitals of kerman university of medical sciences, Iran, the knowledge level of majority of the participants was moderate. Also, **Rozitalab et al. (2015)** clarified that, in a study on Quality of nursing records in Imam Sajjad and Shahid Beheshti Yasouj 1385, the majority of nurses' documentation were complete. In contrast, this finding disagreed with **Ehrerberg (2014)** who found that, nurses had lack sufficient knowledge in documentation.

The current study results showed that, more than half of nurses agreed on documentation skills in NICUs. Also, the majority of nurses had total positive attitude about nurses' documentation skills in NICUs.

These findings were supported by **Mohajjel et al. (2014)** who clarified that, in a study on Survey of Knowledge, Attitude and Performance of Nursing Students towards Nursing Documentation, Iran, the attitudes of majority of nurses were "good". In investigator's point of view, the high attitude towards nursing documentation reflecting its prominent status among nurses valuing documentation.

Meanwhile, these findings disagreed with **Cheevakasemsook et al. (2016)** who indicates that, in a study on nursing documentation complexities, there is a huge gap in recording what has been done and this attitude of nurses is due to lack of motivation, awareness, ineffective documentation framework, and inadequate audits to documentation errors.

The current study results illustrated that, two thirds of nurses had done practices regarding documentation skills for hyperbilirubinemia. This finding disagreed with **Long et al. (2017)** who ensured that, in a study on a nurse-initiated jaundice management protocol improves quality of care in the paediatric emergency department, Canada, there is a deficiency in nurses' practices about documentation skills for hyperbilirubinemia.

The present study results revealed that, more than half of nurses had done practices regarding documentation skills for Prematurity. This finding contradicted with **Amin and Burnell (2015)** who stated that, there is a lack in nurses' documentation skills for prematurity problems.

The current study results clarified that, more than half of nurses had not done practices regarding documentation skills for neonatal problems (Respiratory distress). This finding was consistent with **Farzi et al. (2016)** who found that, in a study on Medication errors by the intensive care units' nurses and the Preventive Strategies, there was no record of ventilation complications and several attempts for intubation of newborns.

The current study results showed that, more than half of nurses had done practices regarding documentation skills for infants of

diabetic mothers. In investigator's point of view, fear of nurses from sudden severe hypoglycemia or hyperglycemia of neonates was the reason for keen documentation.

The present study results indicated that, more than half of nurses had satisfactory practices about documentation skills for neonatal problems. This finding was in the same line with **Mojaveri et al. (2017)** who found that, in a study on Audit nursing reports in intubated neonates admitted in neonatal intensive care unit of Ayatollah Rouhani Hospital, Babol, Iran, the most of nurses had good level practice about documentation skills. Meanwhile, the results of **Ghazanfari et al. (2014)** showed that, in a study on nurse's knowledge and practice of the principles of nursing documentation at hospitals of Kerman University of Medical Sciences, Iran, the performance of 85% of nurses was undesirable in the field of recording. Also, **Oroviogicoechea et al. (2014)** stated that, in a study on Review: evaluating information systems in nursing, nursing documentation records were insufficient regarding the nursing care provided to a patient. Moreover, **Hector (2014)** stated that, in a study on a retrospective analysis of nursing documentation in the intensive care units of an academic hospital in the western cape, south africa, the nursing documentation are not adequately done in the intensive care units.

There was a statistically significant relation between total knowledge of the studied nurses and their socio-demographic characteristics (age, educational qualification and years of experience in NICUs). Whereas, satisfactory knowledge was more prevalent in age group of 30 < 35, bachelor of nursing and other and years of experience of 10 < 15 years in NICUs.

These findings were in accordance with **Hameed and Allo (2014)** who found that, there were significant statistical differences in nursing documentation with regard to educational level of nurses. Meanwhile, these findings contradicted with **Dehghan et al. (2014)** who indicated that, there was no statistically significant relation between nurses' knowledge and their demographic characteristics.

There was a statistically significant relation between total practice of the studied nurses and their socio-demographic characteristics (age, educational qualification and years of experience in NICUs). Whereas, done practice was more prevalent in age group of 35 < 40, bachelor of nursing and other, and years of experience of 10 <15 years and 15 or more.

These findings contradicted with **Farzi et al. (2016)** who showed that, no significant relation was observed between the nurses' practice and their socio-demographic characteristics. Moreover, **Mojaveri et al. (2017)** revealed that, there was no a statistically significant relation between nurses' practice and their demographic characteristics.

There was a statistically significant relation between nurses' attitude and their educational qualification. Whereas, positive attitude was more prevalent in bachelor of nursing. This finding contradicted with **Petkovšek-Gregorin and Skela-Savič (2015)** who ensured that, in a study on nurses' perceptions and attitudes towards documentation in nursing, Slovenia, statistically significant correlation was not established between nurses' attitude and their educational qualification.

There was a highly statistically significant relation between total knowledge of the studied nurses and neonatal diseases. These findings were consistent with **Ahmed and Hani (2017)** who reported that, in a study on Assessment of Nurse's Knowledge and Practice Working in District Hospitals at Minia Governorate about Neonatal Hyperbilirubinemia. The highest percentage of nurses had satisfactory knowledge and the majority of nurses' were competent regarding practices related to hyperbilirubinemia. Meanwhile, these findings disagreed with **Ibrahim and Kambal (2016)** who stated that, in a study on Pediatric Nurses' Knowledge and Practices Regarding Nursing Management of Premature Babies in Neonatal Intensive Care Unit at Soba University Hospital, Khartoum State, Sudan, the majority of pediatric nurses had adequate knowledge about prematurity, but

they were lacking in their clinical skills to manage and document the preterm baby status.

There was a highly statistically significant relation between total attitude of the studied nurses and neonatal diseases (prematurity and respiratory distress). In investigator's point of view, it may be related to attitude affects on the behavior of documentation.

There was a statistically significant positive correlation between total nurses' knowledge, attitude and practice. These findings agreed with **Karimi (2014)** who indicated that, in a study on factors influencing the quality of medical records documentation: strategies for managers and practitioners working in hospitals affiliated to Kashan University of medical sciences, Iran, the practice and quality of documentation increased as a result of high knowledge and attitude.

Conclusion

On light of the current study results, it can be concluded that, more than half of nurses had satisfactory knowledge regarding documentation skills in NICUs. The majority of nurses had positive attitude regarding documentation skills in NICUs. More than half of nurses had total done practice regarding documentation skills in NICUs. There is a highly statistically significant positive correlation between total nurses' knowledge, attitude and practice.

Recommendations

In-service education for upgrading nurses' skills toward documentation in neonate intensive care units. Further research studies are needed for ongoing assessment of nurses including large sample for generalization of results.

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