Nursing Diagnosis of Neonatal Jaundice: Study of Clinical Indicators

Anna Virginia Viana Cardoso Dantas, MsD [a], Lara Jales Rodrigues Farias, RN [a], Sofia Jales de Paula, RN [a],
Rafaella Pessoa Moreira, RN, PhD [b], Viviane Martins da Silva, RN, PhD [a],
Marcos Venícios de Oliveira Lopes, RN, PhD [a], Nirla Gomes Guedes, RN, PhD [a,*]

[a] Federal University of Ceará in Fortaleza, Brazil
[b] University of International Integration of Afro-brazilian Lusophony, Brazil

ARTICLE INFO

ABSTRACT

Purpose: This study aimed to identify the defining characteristics of, and examine their association with, the nursing diagnosis (ND) of Neonatal Jaundice (00194) in sample of hospitalized newborns.
Design and Methods: A cross-sectional study developed with 100 newborns aged between 24 h and ten days. Data collection was performed in a public hospital of tertiary health care between March and June of 2016.
Results: The ND of Neonatal jaundice was present in 31% of the sample. The most frequent defining characteristics were yellow-orange skin color (65%) and abnormal blood profile (75%). Yellow mucous membranes, yellow-orange skin color and bruised skin showed statistically significant sensitivity and specificity. Yellow mucous membranes, yellow sclera and yellow-orange skin color were statistically associated with Neonatal jaundice. Yellow mucous membranes showed the best diagnostic accuracy measurements.
Conclusions: The clinical indicators that best predicted and increased the probability of developing jaundice were identified.
Practice Implications: These clinical indicators increase the ability of nurses to clinically infer nursing diagnoses. This allows nurses to identify signs and symptoms of health conditions in a sensible and definitive manner, decreasing the possibility of errors.

© 2017 Elsevier Inc. All rights reserved.

Introduction

A nursing diagnosis of neonatal jaundice (00194) was included in the 2008 NANDA-I taxonomy and revised in 2010 and 2013. This diagnosis belongs to domain 2 (nutrition) and class 4 (metabolism). According to the NANDA-I taxonomy, the condition is defined as follows: "yellow-orange color of the neonate's skin and mucous membranes that occurs after 24 hours of life as a result of increases in the level of unconjugated bilirubin" (Herdman & Kamitsuru, 2014, p. 172). The following defining characteristics (DC) of neonatal jaundice have been identified: abnormal blood profile, bruised skin, yellow mucous membranes, yellow sclera and yellow-orange skin color. Defining characteristics have been defined as observable clinical indicators characterized by a set of signs and symptoms that are indispensable for a given nursing diagnosis (Herdman & Kamitsuru, 2014).

Neonatal jaundice is the clinical manifestation of hyperbilirubinemia, the occurrence of which is the result of dysfunctions in a newborn's predisposition to produce and ability to excrete bilirubin (Alkhotani, Eldin, Zaghloul, & Mujahid, 2014). Approximately 60% of term newborns and 80% preterm newborns present jaundice during the first week of life (Afzal et al., 2012), accounting for up to 75% of hospital readmissions during the first seven days of life (Henny-Harry & Trotman, 2012; Onyearugha, Onyire, & Ugboma, 2011).

When properly managed, this clinical condition is usually benign and resolved between the seventh and tenth day of life. However, approximately 5% to 11% of newborns develop severe hyperbilirubinemia, which may require phototherapy (National Association of Neonatal Nurses [NANN], 2010), exchange blood transfusion or the use of drugs that accelerate the metabolism and excretion of bilirubin (Olusanya et al., 2015).

Based on the abovementioned assumptions, neonatal nurses play a key role in caring for and promoting the safety of newborns with jaundice. These nurses must actively participate in the identification, screening and treatment of hyperbilirubinemia to prevent the main complication, which is bilirubin encephalopathy (NANN, 2010). Thus, we believe that the care provided to newborns can be better targeted if nurses can collect evidence to support both the results of their assessments and their clinical decisions related to nursing diagnoses, interventions and outcomes.

In March of 2015, an integrative literature review was performed to identify scientific evidence regarding the nursing diagnosis of neonatal

* Corresponding author at: 25, Olimpio Galdino de Sousa st, Apt 701, Patriolino Ribeiro, Fortaleza, Ceará 60810-005, Brazil.
  E-mail addresses: marcos@ufc.br (M.V. de Oliveira Lopes), nirlagomes@hotmail.com (N.G. Guedes).

jaundice and its clinical indicators. The databases consulted were Lilacs, Cochrane Library, Elsevier's Scopus and PubMed, using the following keywords: neonatal jaundice, newborn and hyperbilirubinemia. This review found 121 articles, and only 9 were analyzed after the establishment of inclusion and exclusion criteria. These articles addressed the following topics: the influence of genetic factors in neonatal jaundice (Bisoi, Chakraborty, Chattopadhyay, Biswas, & Ray, 2012; Carvalho et al., 2011; Iglessias et al., 2010; Yusoff et al., 2010); the incidence of neonatal jaundice and its risk factors (Scrafford et al., 2013); the morbidity of ABO hemolytic disease in the newborn (Bhat & Kumar, 2012); the influence on direct bilirubin levels of neonates in four anesthetic strategies used during cesarean (Demiraran et al., 2011); the protective effect of the black race on hazardous bilirubin levels in neonates (Wickremasinghe, Kuzniewicz, & Newman, 2013); and the epidemiology of neonatal jaundice at the University Hospital of the West Indies (Henny-Harry & Trotman, 2012).

The results revealed that none of articles evaluated neonatal jaundice as a nursing diagnosis and indicated no new clinical indicators, only those already in the NANDA-I taxonomy. This gap in the literature indicates that more research is needed on this subject.

Researchers have claimed that there is a need to improve and validate the items included in the NANDA International (NANDA-I) taxonomy to increase their generalizability, predictive ability and reliability in the diagnostic inference process, which would have a positive effect on clinical reasoning and the identification of clinical indicators that better predict the occurrence of a diagnosis (Lopes, Silva, & Araujo, 2012). In this respect, research must be conducted in different populations and settings to support and complement the scientific evidence that underlies this taxonomy (Herdman & Kamitsuru, 2014) to strengthen the ability of nurses to recognize clinical indicators and to promote the development of tools for accurately assessing the clinical status of each patient (Montoril et al., 2016; Pascoal et al., 2012; Pereira et al., 2015).

Based on the abovementioned claims, the following questions were investigated in the present study: What is the prevalence of the nursing diagnosis of neonatal jaundice among hospitalized newborns, and which defining characteristics best predict the nursing diagnosis of neonatal jaundice?

Unfortunately, there is a shortage of studies assessing jaundice as a nursing diagnosis, as well as the limitations and difficulties in the diagnostic inference process in nursing. Furthermore, the incidence of this clinical condition, the possibility of serious consequences resulting from hyperbilirubinemia, and the need for evidence-based clinical practice emphasize the relevance of these data.

We aimed to achieve the following objectives: to identify the defining characteristics of and to examine their association with the nursing diagnosis of neonatal jaundice (00194) in a sample of hospitalized newborns.

Methods

Study Design

A cross-sectional exploratory study was conducted with 100 hospitalized newborns of both gender aged between 24 h and ten days. This age range was utilized because most cases of hyperbilirubinemia resolve between the seventh and tenth day of life and because the definition of this nursing diagnosis includes physiological jaundice, which is usually identified after the first 24 h of life.

The study was conducted from March to June 2016 in a maternity ward that serves as a referral center for maternal and neonatal care in northeastern Brazil. The ethics committee of this institution approved this project (reference number: 1.366.839), and parents/guardians were informed about the purpose of the study and consented to the collection of data by signing an informed consent form.

Sampling

The sample was selected using the consecutive sampling procedure; as such, newborns admitted to the study site were consecutively enrolled if they met the inclusion criteria (Hulley, Cummings, Browner, Grady, & Newman, 2015).

The inclusion criteria were as follows: newborns of both gender who were aged between 24 h and ten days and admitted to intensive care, intermediate care or inpatient units. Newborns with clinical conditions that would hinder the collection of data for all items on the instrument used for data collection, particularly those related to the evaluation of defining characteristics, were excluded from the study. For example, the study excluded preterm newborns with minimal handling indication due to hemodynamic instability and newborns undergoing phototherapy, as this treatment changes skin color and prevents reliable measurement of the defining characteristics.

To determine the required sample size, a latent class model was used, as has been recommended: 15 to 30 individuals must be included for each clinical indicator (Swanson, Lindenberg, Bauer, & Crosby, 2012). Given that the nursing diagnosis of neonatal jaundice has five defining characteristics, and taking 20 individuals as the required number of subjects per characteristic, the sample size required was 100 newborns.

Data Collection

The instrument used for data collection comprised demographic and clinical data, including the defining characteristics of the nursing diagnosis of neonatal jaundice, as established in the NANDA-I. Data were collected by interviewing the guardian of the newborn for collecting demographic data, reviewing medical records, and evaluating the signs and symptoms indicative of the defining characteristics.

The detailed instrument was employed in a pilot study with 15 newborns to verify its consistency with and ability to assess the objectives of the study and to assess difficulties in applying the instrument; then, the instrument was revised based on these data. Thus, some changes in the instrument were needed. The data collected using the instrument included the following: the mother's hospitalization location; the infant's hospitalization location, gestational age classification, current weight, duration of neonatal unit hospitalization, and breastfeeding (nutritional) status; and the researcher's evaluation. In addition, ethnicity was not assessed in this study because these data were not available. Finally, newborns who participated in the pilot study were excluded from the final sample. To make the evaluation more targeted and uniform and assess the presence of the defining characteristics, a protocol was developed that included the conceptual and operational definitions of each indicator.

Data collection was performed by a registered nurse and two appropriately trained undergraduate nursing students. A workshop training session, which involved theoretical and practical approaches, lasted 6 h, and addressed the methodological approach in assessing newborns and the concepts related to the nursing diagnosis of neonatal jaundice and the conceptual and operational definitions of each defining characteristic. The participants were then trained on the application of the instrument and the performance of the physical examination using an anatomical model. Subsequently, a simulation was conducted on-site prior to initiating the pilot study; this simulation included the performance of the physical examination and completion of the instrument.

Data Analysis

Data were compiled in Excel for Windows, and statistical analyses were performed using SPSS version 20.0 and R version 3.2 (R Foundation for Statistical Computing, Vienna, Austria).

A descriptive analysis was performed, including an assessment of prevalence and the determination of measures of central tendency