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Nutritional Screening of Sick Neonates in NICU and its Relation to Short Term Outcome

Thesis

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By

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Doaa Nagy Ali

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List of Abbreviations

Abb.	Full term

AAP: .....American academy of pediatrics
Alb: .....Albumin
ALP: .....Alkaline phosphatase
BM: .....Breast milk
BPD: .....Broncho pulmonary dysplasia
Ca: .....Calcium
CBC: .....Complete blood count
cc: .....Cubic centimeter
CHD: .....Congenital heart disease
CHO: .....Carbohydrates
Cm: .....Centimeter
CNS: .....Central nervous system
CRP: .....C-reactive protein
d: .....day
DIC: .....Disseminated intravascular coagulation
dl: .....Deciliter
ELBW: .....Extremely low birth weight
FEN: .....Full enteral nutrition
GIR: .....Glucose infusion rate
GIT: .....Gastrointestinal tract
gm: .....gram
HB: .....Hemoglobin
HC: .....Head circumference
IL: .....Interleukin
IM: .....Intramuscular
IU: .....International unite
IUGR: .....Intrauterine growth retardation
IV: .....Intravenous
IVF: .....Intravenous fluid

List of Abbreviations (Cont...)

Abb.	Full term
Kcal:	*Kilocalorie*
KCL:	*Potassium chloride*
Kg:	*Kilogram*
LBW:	*Low birth weight*
MAC:	*Mid arm circumference*
MCT:	*Medium chain triglyceride*
MEF:	*Minimal enteral feeding*
mEq:	*millliequivalent*
mg:	*Milligram*
min:	*Minute*
MVI:	*Multivitamin injection*
NaCl:	*Sodium chloride*
NEC:	*Necrotizing enterocolitis*
NICU:	*Neonatal intensive care unite*
NNST:	*Neonatal nutrition screening tools*
no:	*Number*
NST:	*Nutrition screening tools*
OP:	*Oro-gastric*
P.O.:	*per-os*
PI:	*Ponderal index*
PLT:	*Platelets*
PN:	*Parenteral nutrition*
PO4:	*Phosphorus*
PUFA:	*Polyunsaturated fatty acid*
RDS:	*Respiratory distress syndrome*
RR:	*Respiratory rate*
S.SC:	*Septic Score*
SGA:	*Small for gestational age*
TLC:	*Total leukocyte count*

List of Abbreviations (Cont...)

Abb.	Full term
TNF:	*Tumor necrosis factor*
TPN:	*Total parenteral nutrition*
VLBW:	*Very low birth weight*
wk:	*week*

ABSTRACT

Nutritional Screening of Sick Neonates in NICU and its Relation to Short Term Outcome

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Background: Malnutrition during infancy has long-term adverse consequences for both physical and psychological development. Early detection of malnutrition among hospitalized infants is essential to provide optimal nutrition support. So neonatal nutritional assessment is very important and determines the daily energy and nutrient requirements for optimal growth and whether these nutritional goals are met.

Aim of the Work: To assess the validity of Nutrition risk screening tools, and to stratify neonates admitted to the NICU according to their nutritional risk and correlate this to their outcome.

Patients and Methods: This Cross sectional study was conducted in NICU at Ain Shams University Hospitals. All neonates in a set period of 6 months from December 2017 to June 2018 were enrolled in the study after written and verbal consent take from parents. Number of patients started with 200 and ended with 150.

Results: There were statistically significant difference between the three studied risk groups as regard their gestational age, APGAR score and history of chronic illness of their mothers. There were statistically significant difference between the patients with different risk groups and the diagnosis of admission except urinary tract infection, transient tachypnea of newborn, intrauterine growth retardation, respiratory distress for investigations, blood group incompatibility and meconium aspiration syndrome shows no statistically significant difference with risk groups.

Conclusion: It is important for the clinician to appreciate the specific nutrient requirements associated with various disease states and their therapies for example, in the ill newborn. Neonatal illnesses significantly alterenergy, protein and mineral metabolism in a disease-specific manners.

Keywords: *NICU; Necrotizing enterocolitis; Extremely low birth weight; Congenital heart disease*

INTRODUCTION

Hospitalized children are at increased risk of malnutrition, especially preterm infants, often experience poor growth ***(Koletzko et al., 2014).***

Adequate nutrition and growth during neonatal period are important, this has important implications for their health in later life. Increased nutritional support at neonatal intensive care unit has been shown to increase growth, such support is not universally available. Being able to carry out and interpret a nutritional assessment is an important skill for paediatricians caring for neonates ***(Johanson, 2014).***

Carrying out a nutritional assessment can be time consuming, and may be unnecessary for every patient in the NICU, 'Nutritional screening' is a way to identify patients at the highest nutritional risk and in need of full nutritional assessment, and is currently recommended by ESPGHAN. However, the only NICU specific tool is the 'Ohio Neonatal Nutritionists Screening Criteria for identifying Hospitalized Infants at Highest Nutritional Risk ***(Wargo, 2000).***

The 'Ohio Neonatal Nutritionists tool is a complex tool incorporates nutritional assessment and has not been formally validated, but considers infants with a birth weight <1 kg, those with poor growth (<10 g/kg/day after 2 weeks of age) and infants with necrotising enterocolitis, chronic lung disease or

gastrointestinal surgical conditions to be at the highest nutritional risk. In the absence of a validated screening tool, these parameters seem a reasonable basis to direct nutritional assessments. Using a 'screening' approach on a weekly basis ensures that all infants are given brief consideration of their growth and nutritional risk, and also allows the use of nutritional care pathways for specific groups of patients ***(Wargo, 2000).***

While there is no specific evidence that nutritional assessment per se improves outcomes in neonates, there is evidence that improved nutritional support for preterm infants improves growth ***(Sneve et al., 2008).*** Nutritional assessment is essential to properly direct such increased support, such as dietetic input or revision of parenteral nutrition and feeds to address shortfalls in intake.

Nutritional screening enables nonspecialist staff to identify patients at nutritional risk and in need for further assessment and support by specialist staff.

Aim of the Work

To assess the validity of Nutrition risk screening tools, and to stratify neonates admitted to the NICU according to their nutritional risk and correlate this to their outcome.