Prevalence and Profile of Malnutrition in Under-Five children with Congenital Heart Diseases attending Cairo University Pediatrics Hospital

Thesis

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Public Health

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ABSTRACT

Background: Studying the link between child malnutrition and disease morbidity and mortality has gained much ground over the past years. With focus being drawn towards malnutrition's connection with congenital heart diseases (CHD), it was found that despite the advancements their management, still malnutrition rates persist to stay high in this population.

Aim: To study the prevalence of malnutrition in under-five children with CHD and study the factors related to it and thus raise the awareness of such a problem and its implications.

Methods: This study included 300 under-five CHD patients attending the cardiology outpatient clinic in AboulRish Pediatrics hospital. An anonymous, structured interview questionnaire was designed to collect data from the guardians regarding sociodemographic data, nutritional knowledge and care, different feeding habits and patterns, medical care and condition. Anthropometric measurements were obtained for all the cases, for which growth curves were plotted and compared to the WHO standards and laboratory investigations were performed.

Results: The study showed the mean age of the patients to be 20.8 ± 17.6 months, with varying uncomplicated and non-severe CHD diagnoses. The mean weight-for-age z-score was -1.9 ± 0.6, the mean height-for-age z-score was -1.8 ± 0.6 and the mean weight-for-height z-score was -1.2 ± 0.7, this in addition to the mean Hb% of the studied patients was 11.6 ± 1.7. Stunting was found in 89 (29.7%) patients, wasting in 20 (6.7%) and 132 (44%) children were underweight, with a total malnutrition of 141 (47%). the prevalence of anemia was 96 (32%). Positive correlations were found for malnutrition and anemia, financial status and commencement of complementary feeding as well as a significant negative correlation between breastfeeding duration and stunting.

Conclusion & Recommendations: Malnutrition is an evident problem among under-five children with CHD. It is significantly related to anemic status, financial status and feeding practices. There was general lack of nutritional knowledge and neglect of nutritional care and practice directed towards these patients. The study recommends that nutrition education should be mandated as a component of the cardiology clinic visit, height and weight measurement with plotting of individual growth curves, regular Hemoglobin analysis. Specialized personnel should consult and advise caregivers about the proper different feeding practices of these children.

Keywords: Congenital heart disease, Malnutrition, Under-five children, Anemia, Anthropometry

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CONTENTS

List of Abbreviations

AS	:	Aortic Stenosis
ASD	:	Atrial Septal Defect
BMI	:	Body Mass Index
CDC	:	Center for Disease Control and prevention
CHD	:	Congenital Heart Disease
CoA	:	Coarctation of the Aorta
CT	:	Computed Tomography
DRI	:	Dietary reference intake
ECG	:	Electrocardiogram
FAO	:	Food and Agriculture Organization
GERD	:	Gastro-Esophageal Reflux Disease
Hb	:	Hemoglobin
ICU	:	Intensive Care Unit
MDGs	:	Millennium Development Goals.
MRA	:	Magnetic Resonance Angiography
MRI	:	Magnetic Resonance Imaging
MS	:	Mitral Stenosis
MUAC	:	Mid-Upper Arm Circumference
PDA	:	Patent Ductus Arteriosus
PS	:	Pulmonary Stenosis
RDA	:	Recommended dietary allowances
REE	:	Resting Energy Expenditure

TEE : Total Energy Expenditure

TGA : Transposition of the Great Arteries

TIBC : Total iron binding capacity

TOF : Tetralogy of Fallot

TR : Tricuspid Regurge

TSF : Triceps Skin Fold thickness

TTE : Trans-Thoracic Echocardiography

UN : United Nations

UNICEF : United Nations Children's Fund

VSD : Ventricular Septal Defect

WHO : World Health Organization

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Important Definitions

Malnutrition: nutritional disorders in all their forms (including imbalances in energy, specific macronutrients and micronutrients, and dietary patterns). Conventionally, the emphasis has been on inadequacy, but malnutrition also applies to excess and imbalanced intakes. It occurs when the intake of essential macronutrients and micronutrients does not meet or exceeds the metabolic demands for those nutrients. Metabolic demands vary with age and other physiological conditions, they are also affected by environmental conditions, including poor hygiene and sanitation. ***(WHO, 2013).***

Child stunting: height-for-age < 2 standard deviations below the WHO child growth standard median for children aged under 5 years. Stunting becomes a public health problem when ≥ 20% of the population is affected. ***(WHO, 2013).***

Child underweight: weight-for-age < 2 standard deviations below the WHO child growth standard median for children aged under 5 years. Underweight becomes a public health problem when ≥ 10% of the population is affected. ***(WHO, 2013).***

Child wasting: weight-for-height < 2 standard deviations below the WHO child growth standard median for children aged under 5 years. Wasting becomes a public health problem when ≥ 5% of the population is affected. ***(WHO, 2013).***

Anthropometry: The science of measuring the size, weight and proportions of the human body. ***(Hammond, 1998)***

Food frequency questionnaire: A method of dietary assessment in which the data collected relate to how often and in what amounts food items are consumed. ***(Hammond, 1998).***

Anemia: a condition in which the number of red blood cells or their oxygen-carrying capacity is insufficient to meet physiological needs, which vary by age, altitude, gender, pregnancy status and smoking status. ***(WHO, 2013).***

Low birth weight: weight at birth < 2500 g. ***(WHO, 2013).***

Food and nutrition security: the situation in which all people at all times have physical, social and economic access to food that is safe, consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and supported by an environment of adequate sanitation, health services and care, allowing for a healthy and active life. ***(WHO, 2013).***

Recommended Dietary Allowance (RDA): The average daily dietary nutrient intake level sufficient to meet the nutritional requirements of nearly all (97-98%) healthy persons in a particular life stage and gender group. ***(More, 2013).***

Estimated Energy Requirement (EER): The average dietary energy intake that is predicted by energy balance in a healthy adult of a defined age, gender, weight, height, and level of physical activity that is consistent with good health. In children, the EER is taken to include the needs associated with the deposition of tissues at rates consistent with good health. ***(More, 2013).***

Dietary reference intake (DRI): A set of values for the dietary nutrient intakes of healthy people in the U.S. and Canada, used for planning and assessing diets. Includes the Recommended Dietary Allowance (RDA), the Adequate Intake (AI), the Tolerable Upper Limit (TUL), and the Estimated Average Intake (EAI). ***(More, 2013).***

Nutrition education: any combination of educational strategies designed to facilitate voluntary adoption of food choices and other food- and nutrition-related behaviors conductive to health and wellbeing. It is delivered through multiple venues and involves activities at the individual, community and policy levels. ***(Contento, 2007).***