Body Composition and its Relation to Dietary Habits, Energy and Nutrients Intake

Thesis

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Sara Hassan Metwally El Ghateet

List of Contents

List of Tables

List of Tables cont...

List of Tables cont...

List of Figures

List of Abbreviations

Abb.	Full term
BAPEN	*British Association for parenteral and Enteral Nutrition*
BAT	*Brown adipose tissue*
BIA	*Bioelectrical impedance analysis*
BMC	*Biomed central*
BMI	*Body mass index*
BMR	*Basal metabolic rate*
DD	*Desire to drink*
EERs	*Estimated energy requirements*
EF	*Enjoyment of food*
EOE	*Emotional over-eating*
EUE	*Emotional under-eating*
FF	*Food fussiness*
FFM	*Fat free mass*
FM	*Fat mass*
FR	*Food responsiveness*
GH	*Growth hormone*
HDL	*High density lipoproteins*
IGF	*Insulin growth factor*
IMAT	*Intramascular adipose tissue*
LDL	*Low density lipoproteins*
MUAC	*Mid-upper arm circumference*
NHMRC	*National Health and Medical research Council*
PAL	*Physical activity level*
RDI	*Recommended dietary intake*
SE	*Slowness in eating*
SFT	*Skinfold thickness*
SR	*Satiety responsiveness*
TBW	*Total body water*
UL	*Upper level*
WC	*Waist circumference*

INTRODUCTION

Nutritional status affects every pediatric patient's response to illness. Good nutrition is important for achieving normal growth and development. Nutritional assessment should be an integral part of the care for every pediatric patient ***(Fontes et al., 2014).***

Body composition assessment aims to quantify the amount and relative proportions of body tissue compartments, and in some cases, their cellular, molecular, and atomic components. Earlier studies have clearly illustrated the limitations for using Body mass index and skinfold thicknesses for these purposes, because Body mass index can't distinguish between fat-free mass (FFM) and fat mass (FM) changes. Skinfold thicknesses don't necessarily reflect the total amount of fat in the body, this is because much of the body fat is internal and not indexed by skinfold measurements ***(Wells and Fewtrell, 2006).***

It is worth mentioning that although body composition analysis has become a useful tool in both clinical and research settings, Its use in the pediatric population is complicated by the rapid periods of growth and physical development that are characteristic of infancy, childhood, and adolescence ***(Ellis, 2000).***

Increasing evidence suggests that diet and lifestyle in childhood and adolescence have a potential lifelong effect for risks of many chronic diseases such as obesity ***(Berenson et al., 1998).***

Within the home environment, shaped by parents, young children have their earliest experiences with food and eating, and from these experiences they gain their knowledge of nutrition. The home food environment is determined by many factors including food availability, feeding rules, parent role modeling, discussion about food and parents' food preparation skills ***(Campbell et al., 2007).***

In Egypt, infants and young children face overlapping forms of malnutrition, including micronutrient deficiencies, stunting and overweight. The double burden of malnutrition, defined as the co-existence of stunting and overweight in a population, is a major health concern in many countries globally, including the Middle and Near East regions ***(Breisinger et al., 2013).***

Study of the body composition among larger sample is required for better description. Relating the body composition with some hypothesized nutritional risk factors, eating behavior, knowledge and attitude might add possibilities for interventions for better health ***(El-Ziny et al., 2010).***

AIM OF THE WORK

This work is aiming at:

1. Assessment of the Body Composition of apparently healthy prepubertal children.

2. Finding out the relationship between body composition of children and their nutrients intake, eating - associated habits, as well as the mothers' nutritional knowledge and their attitude towards healthy eating habits.

Chapter I

NUTRITIONAL ASSESSMENT IN CHILDREN AND ADOLESCENTS

Introduction:

The goal of nutritional assessment in childhood is to determine if there are growth abnormalities that point to the presence of an underlying disease, and also to prevent nutritional disorders and the increased morbidity and mortality that accompany them. To meet these goals, pediatric clinicians must know the risk factors for obesity and malnutrition and must understand the normal and abnormal patterns of growth and the changes in body composition during childhood and adolescence. In addition, they must be able to accurately perform and interpret the results of the nutritional evaluation ***(Fontes et al., 2014).***

Definition of Nutritional assessment:

Nutritional assessment is the quantitative evaluation of nutritional status. A comprehensive nutritional assessment consists of dietary, medical and medication history, physical examination, growth, anthropometric and body composition measurements ***(Beer et al., 2015).***

Methods of Nutritional assessment:

A) Nutritional screening:

Nutritional Evaluation starts with a screening procedure and is followed by a detailed assessment in those patients screened and found to be at risk so Nutrition screening is considered a tool for rapid and simple evaluation of patients at risk of undernutrition ***(Cederholm et al., 2017).***

Screening should be performed within the first 24-48 h after the first contact and thereafter at regular intervals. Patients identified as at risk need to undergo nutritional assessment ***(Cederholm et al., 2015).***

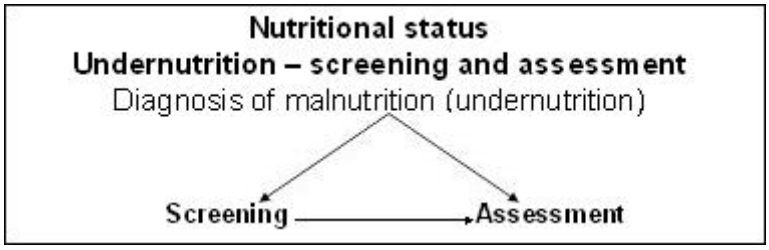

Figure (1): Nutritional screening and assessment ***(Cederholm et al., 2015).***

Screening should stress on the following**:** ***(Lim et al., 2012)***

- Recent weight loss.
- Current body mass index.
- Recent food intake.
- Disease severity.

Tool of Nutritional screening:

Subjective Global Assessment:

It is widely accepted tool for nutritional assessment. The SGA includes history of weight and dietary changes, persistent gastrointestinal symptoms, functional capacity, effects of disease on nutritional requirements, and physical appearance ***(Cederholm et al., 2015).***

B) Nutritional assessment: it includes the following principles:

1) History:

The history or the patient's subjective description of symptoms is the starting point for any nutritional assessment. Besides recent weight changes, and dietary intake it also includes dietary habits, allergies and food intolerances, medications (that may affect appetite, gastrointestinal functions and symptoms) current functional capacity, including recent limitations, and previous medical conditions (any chronic or acute disease state) ***(Barendregt et al., 2004).***

Nutritional History is *composed of:

Quantitative Food frequency questionnaire:

FFQ is a common method for dietary assessment.

Is a questionnaire used to obtain frequency and, in some cases, portion size information about food and beverage consumption over a specified period of time ***(Gibson, 1990).***