Evaluation of growth monitoring care process for stunted under-five aged children in primary health care units in Cairo- Egypt

Thesis

Submitted for Partial Fulfillment of Master Degree in Public Health

By

Amr Rashad Sultan Haidar
Post graduate for master in Public Health
Faculty of Medicine - Ain Shams - University

Under supervision of

Dr. Mohamed Yahia El-Awady
Professor of Community, Environmental and Occupational Medicine
Faculty of Medicine – Ain Shams University

Dr. Hanan Said Ez-Elarab
Professor of Community, Environmental and Occupational Medicine
Faculty of Medicine – Ain Shams University

Dr. Lamyaa Said Al Bagoury
Lecturer of Community, Environmental and Occupational Medicine
Faculty of Medicine – Ain Shams University

Faculty of Medicine
Ain Shams University - 2019

سورة البقرة الآية: ٣٢

Acknowledgment

*First and foremost, I pay my obeisance to **ALLAH,** the almighty who bestowed upon me the wellbeing, courage, inspiration and the power to complete this work.*

*After ALLAH, I express my special appreciation and sincere gratitude to my supervisor, **Prof. Mohamed Yahia El-Awady**, Professor of Community, Environmental and Occupational Medicine - Faculty of Medicine- Ain Shams University for his Kind supervision and constant support. His invaluable help of constructive comments and critical suggestions throughout the experimental and thesis works have contributed to the completion of this research.*

*Furthermore I owe my deepest gratitude and thanks to **Prof. Hanan Said Ez-Elarab** Professor of Community, Environmental and Occupational Medicine - Faculty of Medicine- Ain Shams University for her continuous supervision, encouragement, help and availability. Her invaluable guidance, constructive comments, healthy criticism, affectionate attitude and patience added considerably to my experience and assisted greatly throughout this work.*

*I am also thankful to **Dr. Lamyaa Said Al Bagoury** lecturer of Community, Environmental and Occupational Medicine - Faculty of Medicine- Ain Shams University for her help, active participation, valuable advice and guidance.*

I would like to thank the managers of Maternal child healthcare centers for approval for conducting my research.

I am very grateful to all my respondents (mothers) who agreed to be interviewed allowing me to get valuable information.

Last but not least, my deepest gratitude goes to my beloved parents; Mr. Rashad Haidar and Mrs. Faiza Al-tawaf also to my brothers especially my big brother Tariq, my sister and my little heart, Dr. Hanan Al-mahjary for their endless love, prayers and encouragement till this work was completed.

Amr Haidar

Dedication

I dedicate this work to…

My loving parents, my brothers, sister and my late grandfather.

List of Contents

Title	Page No.
List of Tables	i
List of Figures	iii
List of Abbreviations	iv
Introduction	1
Aim of the Work	11
Review of Literature	
▪ Epidemiology and risk factors of stunting in Children Under Five Years Old	12
▪ Growth monitoring in Children Under Five Years Old	36
▪ Growth Charts	47
Methodology	72
Results	84
Discussion	112
Limitations	125
Conclusion	126
Recommendations	127
Summary	128
References	132
Appendices	159
Arabic Summary	—

List of Tables

Table No.	Title	Page No.

Tables of review

Table (1): Cut-points of percentiles and Z-scores to define problematic growth status in children 12

Table (2): BFHI* Ten Steps to Successful Breastfeeding. 29

Table (3): Body measurements, by age. 60

Table (4): The frequency of growth measurements for healthy infants and children 71

Tables of results

Table (1): General Characteristics of study sample children. 85

Table (2): Evaluation of documentation in the process of growth monitoring of studied 300 children. 87

Table (3): Evaluation of measuring height in the process of growth monitoring of studied children. 88

Table (4): Evaluation of measuring weight in the process of growth monitoring of studied children. 89

Table (5): Evaluation of plotting on growth chart in the process of growth monitoring of studied children. 90

Table (6): Evaluation of interpretation of growth pattern in the process of growth monitoring of studied children. 91

Table (7): Evaluation of referral process of growth monitoring of studied children. 93

List of Tables Cont...

Table No.	Title	Page No.
Table (8):	General Characteristics of parents.	95
Table (9):	Household Environment.	98
Table (10):	Medical problem recently encountered of study sample children.	99
Table (11):	Vaccination status.	100
Table (12):	Indices of growth according to child age groups.	101
Table (13):	Basic determinants in association with infant growth.	102
Table (14):	Family and caregiver conditions in association with infant growth.	104
Table (15):	Health services utilization in association with infant growth.	106
Table (16):	Household environment in association with infant growth.	107
Table (17):	Start of weaning after six months in association with infant growth.	108
Table (18):	Feeding type in association with infant growth.	109
Table (19):	Health conditions of the child in association with infant growth.	110

List of Figures

Fig. No.	Title	Page No.
Figure (1):	UNICEF conceptual framework of the determinants of child undernutrition	35
Figure (2):	Feeding type among studies sample by their age groups.	97

List of Abbreviations

Abb.	Full term
AAP	American Academy of Pediatrics
ADD	Attention Deficit Disorder
ASF	Animal Source Foods
BF	Breastfeeding
BFHI	Baby-Friendly Hospital Initiative.
CDC	Centers for Disease Control and Prevention
DALYS	Disability adjusted life years.
DHS	Demographic and Health Survey.
EED	Environmental Enteric Dysfunction
FAO	Food and Agriculture Organization
FDA	Food and Drug Administration.
GDP	Gross Domestic Product.
GH	Growth Hormone
GHD	Growth Hormone Disorder
IDSC	Information and Decision Support Center
IGF-1	Insulin-like growth factor 1
ISS	Idiopathic Short Stature
IUGR	Intrauterine Growth Restriction
IYCF	Infant and Young Child Feeding
SGA	Small for Gestational Age
UN	United Nations
UNICEF	United Nations Children's Emergency Fund.
USDA	The United States Department of Agriculture.
WFP	The World Food Program
MGRSG	Multicenter Growth Reference Study Group.
WHO	World Health Organization.
SF	Skin Folds

SPSS …… Statistical Package for Social Sciences software

MUAC ……. Mid-Upper Arm Circumference.

INTRODUCTION

Stunting, or being too short for one's age, is defined as a height for age that is more than two standard deviations below the World Health Organization (WHO) Child Growth Standards median. globally it affects approximately 127 million children under the age of 5 years ***(World Health Organization, 2014a)***. In Egypt around one in five children under age five are stunted, and one in ten children is severely stunted ***(EDHS, 2014).*** If current trends continue, projections indicate that 162 million children under 5 years will be stunted in 2025 ***(World Health Organization, 2014b).***

Stunting is one of the children health indicators. It is a largely irreversible outcome of inadequate nutrition and repeated bouts of infection during the first 1000 days of a child's life. Stunting has long-term effects on individuals and societies, including: diminished cognitive and physical development, reduced productive capacity and poor health, and an increased risk of degenerative diseases such as diabetes ***(Aslam, 2013).***

Stunting is an enormous drain on economic productivity and growth. Economists estimate that stunting can reduce a country's gross domestic product by up to 3% ***(The World Bank, 2006).***

Stunting is a principal indicator of linear growth retardation which is relatively uncommon in the first few months of life, but it becomes more common as children gets older ***(Khatab, 2010).*** If child's height/length for age is below (-2 SD) from median of the WHO Child Growth Standards reference population, it is considered short for age, or stunted which implies that he/she has been chronically undernourished. While those whose measures are below (-3 SD) from median are considered severely stunted ***(WHO MGRSG, 2006).***

National growth references are likely to become outdated in the years after construction ***(Schönbeck et al., 2012).*** Consequently, regular updates to all growth references are required to allow more accurate screening for height disorders ***(Marques-Vidal et al., 2008).***

The first 1000 days of life - between a woman's pregnancy and her child's second birthday - is a unique period of opportunity when the foundations for optimum health and development across the lifespan are established. The right nutrition and care during the 1000 day window influences not only whether the child will survive, but also his or her ability to grow, learn and rise out of poverty. As such, it contributes to society's long-term health, stability and prosperity ***(Unicef, 2017).***

Children who get the right nutrition in their first 1,000 days have stronger physical and mental development, and are 10 times more likely to overcome life-threatening childhood diseases and have healthier families of their own ***(Saltzman et al., 2014; Twigg et al., 2014).***

Growth monitoring can be summarized as regularly measured height and weight of children, plotting on a growth chart, when growth is abnormal, should be done appropriate investigations, as a result, a serious condition is diagnosed earlier, and the prognosis is improved by the earlier diagnosis.

Growth-monitoring performance depends on growth-monitoring practices, mainly the type of growth charts and the referral criteria used ***(Garner et al., 2000).***

Rationale:

Early detection of deviation of growth pattern from within normal (in between ±2 Z score) is associated with effective control of stunting and underweight, that it why all components of growth monitoring for detection and subsequent referral of cases should be of high quality performance.

Hypothesis:

All components of growth monitoring in primary care are performed with high quality of performance

Study questions

1. What is the level of performance of detection process of under five stunted children in primary care?
2. What is the degree of quality of measuring and plotting children anthropometric measurements?
3. Is there well designed referral system for detected stunted children?
4. What is the prevailing risk factors for stunting among studied sample?