



EVALUATION OF NUTRITION EDUCATION
INTERVENTION PROGRAMME ON NUTRITIONAL
STATUS AMONG CHILDREN BELOW FIVE YEARS
OF AGE IN SHABELLE (GODE) ZONE OF SOMALI
REGION, EASTERN ETHIOPIA

BY

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ABSTRACT

Malnutrition is one of the most distressing public health problems all over the world. Undernutrition is common in third world countries. It is an insufficiency of nutrients, minerals, and vitamins, that person requires to keep up the best possible strength of cells, tissues and organs. In the previous two and half decades (1990 – 2015), a great effort toward accomplishing millennium development goal (MDG) four were performed. The number of under-five mortality significantly decreased by half during this period. However, a significant number of children less than five years are still suffering and dying because of undernutrition in developing world. This lead to a negatively influences on physical wellbeing and linear growth of infants and pre-school children. Ethiopia is one of the poorest among the developing nations and undernutrition is the highest within the sub-Saharan Africa. Hence, this study aims to evaluate the effect of nutrition education intervention (NEI) on knowledge, attitude and practice (KAP) of the mothers/caregivers on infant and young child feeding (IYCF) behaviours and nutritional status of the children below five years. This study was conducted in two phases, first phase was a cross sectional study assessing mothers/caregivers KAP on IYCF and nutritional status of the children, in order to identify the gaps, plan properly, and conduct NEI. In the second phase a group randomized controlled trial design were employed. When selecting the intervention and control districts the socio-demographic, economic and life style similarities were taken into consideration. A total of 415 in phase one and 404 in phase two child-mothers/caregivers pairs participated in the study from Gode and Adadle districts of Shabelle zone. Semi structured interviewer administered questionnaire, anthropometric, blood sample assessment were performed. At baseline study using multivariable logistic regression showed being in Gode District ($p < 0.001$), and not being housewife ($p < 0.05$) were significantly associated with having good knowledge about optimal infant and young child feeding (IYCF), and wealth index ($p < 0.01$) were positively associated with favourable attitude, and being literate ($p < 0.01$) is positively associated with good practice. At post intervention, the KAP of mothers/caregivers mean score improved significantly after NEI. Paired sample t-test showed that KAP mean score of mothers/caregivers significantly ($p < 0.001$) improved after intervention. Similarly, independent t-test mean score difference of the difference (DOD) were significantly improved ($p < 0.001$) in all three variables compared to control group. Likewise, the mean Z-score of wasting ($p < 0.001$) and underweight ($p < 0.01$) of the children within the group were significantly improved in intervention group. This was not seen in stunting, which was almost similar in both phases. Nonetheless, control group showed a significant worsening mean Z-score for wasting, underweight, and stunting ($p < 0.05$) that indicates the worsening of the children nutritional status. Regarding the anaemia status of the children, the mean score showed statistically significant improvement ($p < 0.001$), after NEI in both groups. But, the intervention group has significantly higher increment. In conclusion, NEI had shown improvement of maternal/caregivers KAP related to IYCF behaviours. Thus, subsequently improved the nutritional status of the children. Therefore, NEI should be scaled up and expanded to rural communities in sustainable manner, an especial attention should be given to those families and communities with poor wealth index and food insecure by provision of accessible, available and affordable food items and services at grass root level.

خلاصة البحث

سوء التغذية هو أحد أكثر مشاكل الصحة العامة انتشارا في جميع أنحاء العالم. نقص التغذية شائع في بلدان العالم الثالث، وهو عدم كفاية المواد الغذائية والمعادن والفيتامينات التي يحتاجها الشخص للحفاظ على أفضل قوة ممكنة للخلايا والأنسجة والأعضاء. في العقدين السابقين والنصف (1990 - 2015)، بُذلت جهود كبيرة لتحقيق الهدف الرابع من الأهداف الألفية الإنمائية. انخفض عدد وفيات الأطفال دون سن الخامسة إلى النصف خلال هذه الفترة. ومع ذلك، فإنه لا يزال عدد كبير من الأطفال دون الخامسة من العمر يعانون ويحتضرون بسبب نقص التغذية في البلدان النامية. يؤثر هذا النقص سلبا على الرفاهية البدنية والنمو الخطي للرضع وأطفال ما قبل سن المدرسة. تعتبر إثيوبيا من أحد أفقر البلدان النامية، ونقص التغذية فيها هو الأكثر ارتفاعا في أفريقيا جنوب الصحراء الكبرى. وبالتالي، تهدف هذه الدراسة إلى تقييم تأثير التدخل التعليمي الغذائي على معارف ومواقف وممارسات (KAP) الأمهات/مقدمي الرعاية على سلوكيات تغذية الرضع والأطفال (IYCF)، والحالة الغذائية للأطفال دون سن الخامسة من العمر. أجريت هذه الدراسة على مرحلتين، المرحلة الأولى كانت دراسة مقطعية لتقييم معارف ومواقف وممارسات الأمهات/مقدمي الرعاية على سلوكيات تغذية الرضع والأطفال والحالة الغذائية للأطفال من أجل تحديد الثغرات، والتخطيط بشكل صحيح، وإجراء التدخل التعليمي الغذائي. تم في المرحلة الثانية استخدام مجموعة ذي تصميم عشوائي. أخذت في الاعتبار أوجه التشابه الاجتماعي-الديمقراطي، والاقتصادي، وأسلوب الحياة عند اختيار مناطق التدخل والمناطق الضابطة. شارك في الدراسة ما مجموعه 415 في المرحلة الأولى، و 404 في المرحلة الثانية من الأمهات-الأطفال/مقدمي الرعاية في منطقتي غودي وأدال في منطقة شايبيل. تم استخدام استبيانات شبه منظمة، وتم أخذ القياسات الجسمانية، وتقييم عينات الدم. في الدراسة الأساسية باستخدام الانحدار اللوجستي متعدد المتغيرات أظهرت أن تكون في منطقته غودي ($p < 0.001$)، و لم تكن ربه منزل ($p < 0.05$) ويرتبط بشكل كبير مع وجود معرفه جديده حول التغذية المثالية للرضع وصغار لأطفال (IYCF)، ومؤشر الثروة ($p < 0.01$) ترتبط بشكل ايجابي مع الموقف الإيجابي، وترتبط بشكل إيجابي ان تكون متعلمة ($p < 0.01$) مع الممارسه الجيدة. في مرحلة ما بعد التدخل، تحسن معدل نقاط معارف ومواقف وممارسات الأمهات/مقدمي الرعاية بشكل ملحوظ بعد التدخل التعليمي الغذائي. أظهر اختبار تي للعينات المقترنة أن معدل نقاط معارف ومواقف وممارسات الأمهات/مقدمي الرعاية قد تحسن بشكل ملحوظ ($p < 0.001$) بعد التدخل. وبالمثل تحسن فرق الفروق لمعدل نقاط اختبار تي المستقل (DOD) ($p < 0.001$) في جميع المتغيرات الثلاثة مقارنة بالمجموعة الضابطة. وبالمثل، فإن معدل نقاط-Z للضمور ($p < 0.001$) ونقص الوزن ($p < 0.01$) للأطفال داخل المجموعة قد تحسن بشكل ملحوظ في مجموعة التدخل. لم يكن ذلك ملحوظا في التقزم، الذي كان على حاله في كلا المرحلتين. ومع ذلك، أظهرت المجموعة الضابطة انخفاضا كبيرا في معدل درجة Z للضمور، ونقص الوزن، والتقزم ($p < 0.05$) مما دل على تفاقم الوضع الغذائي للأطفال. وفيما يتعلق بحالة فقر الدم لدى الأطفال، أظهر معدل النتائج تحسنا ملحوظا ($p < 0.001$) بعد التدخل التعليمي الغذائي في المجموعتين، ولكن كان لدى مجموعة التدخل زيادة أعلى بكثير من المجموعة الضابطة. وفي الختام، أظهر التدخل التعليمي الغذائي تحسنا في معارف ومواقف وممارسات الأمهات/مقدمي الرعاية على سلوكيات تغذية الرضع والأطفال، وبالتالي تحسن لاحقا الوضع الغذائي للأطفال، مقارنة بالمجموعة الضابطة. ومن ثم ينبغي توسيع التدخل التعليمي الغذائي في الأسر والمجتمعات المحلية للاستدامة الغذائية، وتعطي الأهمية للأسر والمجتمعات الضعيفة إقتصاديا وذات أمن غذائي منعدم، وتوفير المواد الغذائية المتاحة والمتاحة بأسعار معقولة، وتقديم كافة الخدمات الضرورية.

APPROVAL PAGE

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DECLARATION

I hereby declare that this thesis is the result of my own investigation, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

Rashid Abdi Guled

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Date

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*This thesis is dedicated to Allah (SW), His Prophet & Messenger Muhammad (SAW),
my parents Abdi Guled & Shaniya Hared (RA).*

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ABBREVIATIONS

CBN	Community Based Nutrition
CF	Complementary feeding
CHD	Cronary Heart Diseases
CI	Confidence interval
Cm	Centimetre
CMR	Child Mortality Rate
CSA	Central Statistics Agency
DDS	Dietary Diversity Score
DFID	Department of International Development
DOD	Difference of the Difference
EBF	Exclusive Breast Feeding
EHDS	Ethiopia Health and Demographic Survey
ENA	Essential Nutrition Action
EOS	Enhanced Outreach Strategy
FDRE	Federal Democratic Republic of Ethiopia
FMOH	Federal Ministry of Health
GDP	Gross Domestic Product
GLM	General Linear Models
Hb	Haemoglobin
HAZ	Height for Age Z-Score
H/A	Height for Age
HIV/AIDS Syndrome	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
HTN	Hypertention
IBF	Initiation of Breastfeeding
ICF	Initiation of Complementary Feeding
IUM	International Islamic University Malaysia
IMR	Infant Mortality Rate
IQ	Intelligence Quotient
ITNs	Insecticide Treated Nets
IREC	IUM Research and Ethical committee

IYCF	Infant and Young Child Feeding
KAP	Knowledge Attitude and Practice
LBW	Low Birth Weight
LLINs	Long lasting Insecticide Treated Nets
MDG	Millennium Development Goals
MOH	Ministry of Health, Ethiopia
NEI	Nutrition Education Intervention
NGO	Non-Governmental Organization
PCC	Population Census Commission
PEM	Protein Energy Malnutrition
PhD	Doctor of Philosophy
SD	Standard Deviations
SPSS	Statistical Package for Social Science
SRHB	Somali Regional Health Bureau
U5MR	Under-five Mortality Rate
UK	United Kingdom
UN	United Nations
UNICEF	United Nations Children Fund
US	United State
USDA	United State Department of Agriculture
W/A	Weight for Age
WAZ	Weight for Age Z-Score
WHZ	Weight for Height Z-Score
W/H	Weight for Height
WHO	World Health Organization

LIST OF SYMBOLS

\pm	Plus or Minus
$<$	Less than
\leq	Less than or equal
$>$	More than
\geq	More than or equal
α	Alpha
β	Beta
cf.	Compare
etc.	and so on
g	gram
i.e.,	that is
Kg	Kilogram
$^{\circ}\text{C}$	Degree celicius
viz.,	Namely
vs.	Versus

PUBLICATIONS

- 1- Guled R. A., Mamat N. M., Belachew T., Abu Bakar W. A. M., & Assefa N. (2016). Knowledge, Attitude and Practice of Mothers / caregivers on Infant and Young Child Feeding in Shabelle Zone, Somali Region, Eastern Ethiopia : A Cross Sectional Study. *Revelation and Science*, 6(2), 42–54.
- 2- Guled R. A., Mamat, N. M., Belachew T., Abu Bakar W. A. M., & Assefa N. (2017). Predictors and Prevalence of Anaemia, Among Children Aged 6 to 59 Months in Shabelle Zone, Somali Region, Eastern Ethiopia: A Cross Sectional Study. *International Journal of Development Research*, 7(1), 11189–11196. <https://doi.org/ISSN: 2230-9926>
- 3- Guled R. A., Mamat N. M., Belachew T., Abu Bakar W. A. M., & Assefa N. (2016). Undernutrition Prevalence and its Determinants among Children below five Years of age in Shabelle Zone, Somali Region, Eastern Ethiopia: A cross sectional study. *IIUM JKAHS 1(2) 72 -91*.
- 4- Guled R. A., Mamat N. M., Belachew T., Abu Bakar W. A. M., & Assefa N. (2017). Effect of Nutrition Education Intervention on Knowledge Attitude and Practice of Mothers/caregivers on Infant and Young Child Feeding, Shabelle Zone, Somali region, Ethiopia. Submitted *Revelation and Science journal IIUM and accepted*.
- 5- Guled R. A., Mamat N. M., Belachew T., Abu Bakar W. A. M., & Assefa N. (2017). Effect of nutrition education intervention on predictors and prevalence of anaemia among children aged 6 to 59 months in Shabelle zone, Somali Region, Eastern Ethiopia. *Malaysian Journal of Nutrition. Abstract, volume 23 (supplement), 1st Southeast Asia Public Health Nutrition Conference*.

Poster presentations

- 1- Guled R. A., Mamat N. M., Belachew T., Abu Bakar W. A. M., & Assefa N. (2016). Undernutrition Prevalence and Its Determinants among Children below Five Years of Age in a Shabelle Zone of Somali Region, Eastern Ethiopia. *2nd KAHS Research Week 2016 and the 1st Allied Health Scientific Colloquium 2016. Poster presentation*.
- 2- Guled R. A., Mamat N. M., Belachew T., Abu Bakar W. A. M., & Assefa N. (2016). Anaemia Prevalence and Its Predictors among Children Aged 6 to 59 Months in a Pastoralist and Agro Pastoralist Community of Somali Region,

Eastern Ethiopia. *2nd KAHS Research Week 2016 and the 1st Allied Health Scientific Colloquium 2016. Poster presentation.*

- 3- Guled R. A., Mamat N. M., Belachew T., Abu Bakar W. A. M., & Assefa N. (2016). Knowledge, Attitude and Practice of Mothers/Caregivers on Infant and Young Child Feeding, in Shabelle Zone of Somali Region, Eastern Ethiopia. *2nd KAHS Research Week 2016 and the 1st Allied Health Scientific Colloquium 2016. Poster presentation.*
- 4- Guled R. A., Mamat N. M., Belachew T., Abu Bakar W. A. M., & Assefa N. (2016). Nutritional status, contributing factors and effect of nutrition education programme of under five children in Shabelle (Gode) zone (province) of Somali region, eastern Ethiopia. *IIUM Research Symposium. Poster presentation.*
- 5- Guled R. A., Mamat N. M., Belachew T., Abu Bakar W. A. M., & Assefa N. (2017). Child feeding behaviour in Shabelle zone community of Somali region, eastern Ethiopia. *International forum on quality and safety in health care 26-27 April, London.*

Oral presentations

- 1- Guled R. A., Mamat N. M., Belachew T., Abu Bakar W. A. M., & Assefa N. (2017). Effect of nutrition education intervention on predictors and prevalence of anaemia among children aged 6 to 59 months in Shabelle zone, Somali Region, Eastern Ethiopia. *1st Southeast Asia Public Health Nutrition Conference, in conjunction with Nutrition Society of Malaysia 32nd Annual Scientific Conference.*

CHAPTER ONE

GENERAL INTRODUCTION

1.1 OVERVIEW

1.1.1 Malnutrition

Malnutrition is the major public health problem all over the globe. It is either deficiencies, excess, and/or imbalance(s) of nutrients, minerals and vitamins that human being requires to maintain for proper health of cells, tissues, organs and body. However, undernutrition is the commonest type of malnutrition in developing countries and mostly affects the linear growth, health, and development of infants and pre-school children. Ethiopia is one of the poorest among the developing countries, as a result, malnutrition is highest even within the sub-Saharan Africa (Blössner, Onis, & Organization, 2005; Gulati, 2010; IFPRI, 2016; Mekonnen, Tefera, et al., 2005).

1.1.2 Global Burden of Malnutrition

Malnutrition as undernutrition is one of the most important public health problem around the world. In 2015 about 156 and 50 million of children below five years of age were suffering from low height for age (stunting) and low weight for height (wasting), respectively (Figure 1-1). More than 90% of these stunted and wasted children are from Africa and Asia. On the other hand, even though is not the interest or the objective of this study, in the same year about 42 million children reported to be overweight and/or obese globally (IFPRI, 2016; UN, 2015b;