DEBRE MARKOS UNIVERSITY

COLLAGE OF HEALTH SCIENCE

DEPARTMENT OF HUMAN NUTRITION

COMMUNITY BASED PROGRAM TO REDUCE OVERWEIGHT AND OBESITY IN DEBREMARKOS TOWN, EAST GOJJAM ZONE, AMHARA REGION, ETHIOPIA.

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Acronym and Abbreviations

ANC- antenatal care

BMI- body mass index

BCC- behavioural communication change

CF- complementary feeding

DALY- disability adjusted life year

DM- diabetes Miletus

E.C- Ethiopian calendar

EBF- exclusive breast feeding

ETB- Ethiopian birr

ENA- essential nutrition action

FDRE- federal democratic republic of Ethiopia

HCW- health care workers

HEW- health extension workers

IEC- information, communication and education

MAM- moderate acute malnutrition

NACS- nutrition, assessment, counselling and support

NNP- national nutrition program

PLW- pregnant and lactating woman

PNC- post natal care

SAM- severe acute malnutrition

UNICEF- united nation international children's emergency fund

WASH- water, sanitation and hygiene

WHO- world health organization

Summary

Overweight and obesity is defined as abnormal or excessive fat accumulation that may impair health or risk for disease and disease related conditions. There is a substantial increase in prevalence of overweight and obesity among children in both developed and developing countries. Overweight then obesity is also responsible for deaths in later life as a complication of chronic diseases. There is a substantial direct and indirect economic burden attributed to childhood overweight and obesity. So to alleviate this problem programs should be addressed. This programme is designed to address the problem of overweight and obesity in school age children who have age of 6 to 12 years in the next 15 years (2014 to 2029 E.C). The programme has multidirectional benefits from individuals who are overweight and obesity to the nation in different aspects including mental, social, physical, psychological, economical, ecological and other dimensions. The program has three different major activities to be implemented throughout the time period. These are nutrition education or counselling, intervention or treatment and marketing plan. There should be many sector involvements among the major one are agriculture, health and nutrition, and others. The program in these three main sectors can have work division and its own average estimated budget. The sectors have role of nutrition education and counselling intervention and treatment and marketing plan roles. In each role there is average estimated amount of money allocated. Totally the program is designed to do these activities and responsibilities in 550,000(ETB)**.** It has also monitoring and evaluation to determine and measure the amount of progress made for the education, intervention and whether the program related goals/expected outcomes are being met.

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Chapter one

Introduction

1.1. Background

Overweight and obesity is defined as abnormal or excessive fat accumulation that may impair health or risk for disease and disease related conditions. There is a substantial increase in prevalence of overweight and obesity among children in both developed and developing countries. Worldwide 43 million children were overweight and obese and, of which 35 million children are from developing countries. In addition, 92 million were found at risk of having overweight and obesity. Studies done in developed countries revealed that the prevalence of overweight and obesity among school children is increasing.

In Africa, despite that there has been a higher burden of under nutrition, the magnitude of overweight and obesity is increasing at an alarming rate mostly in urban residence. In Sub-Saharan Africa, about 10.6% of school aged children were overweight and obesity, of which 2.5% were obese. Pocket studies done in Tanzania and Kenya showed that the prevalence of overweight and obesity is also increasing in these two countries.

In Ethiopia, pocket studies done in Addis Ababa among school age children revealed that about 7.6–9.9% of school age children were overweight, while 0.9–2.8% were obese. Childhood obesity poses a major risk for serious diet-related chronic diseases, such as type 2 diabetes mellitus, cardiovascular disease, hypertension and stroke, and certain forms of cancer and, it is also noted to be a precursor of adverse health effects in adulthood, as overweight children are more likely to become overweight adolescents and adults. Globally, an estimated 3.4 million deaths, 3.9% years of life lost, and 3.8% of Disability Adjusted Life Years (DALYs) are related to overweight and obesity. The rising of overweight and obesity epidemics is attributed by rapid economic and epidemiologic transition, caused by several socioeconomic and demographic changes that reflects the profound changes in the society.

In addition, overweight and obesity is favoured by risky dietary behaviours such as consumption of fast food and drinks, eating away from home, skipping/missing of meal, regular drinking of sugar rich beverages and low serving/intake of fruit and vegetable. In countries with limited resources and food availability, childhood overweight/obesity is favoured by the good socioeconomic status of their parents while still insufficient nutrition education is available. Eating behaviour of the children is influenced by the availability of food, peers, siblings and parent's behaviour. Sedentary behaviour and physical inactivity are also important risk factors for childhood overweight and obesity.

Now days in Ethiopia the focus agenda is under nutrition, but there are evidences for nutrition transition particularly in urban cities which might have a contribution to over nutrition. In Ethiopia, particularly in Debremarkos city, there is no information regarding prevalence and contributing factors of overweight and obesity among school aged children, though it is known that early prevention of childhood obesity improves quality of life by decreasing an insult for chronic diseases for adolescent and adulthood life. Hence, it is important to develop, implement and evaluate the program on reducing overweight and obesity among school aged children at the capital of east Gojjam, Debremarkos town.

1.2. **Statement of the problem**

Overweight and obesity in general and in childhood specifically, is a key public health issue in many high-income countries and is a steadily rising public health problem in low-income and middle-income countries. Globally, the overall overweight and obesity prevalence has nearly tripled since the mid-1970s and it is the fifth most common cause of mortality globally, contributing to at least 2.8 million deaths per year. Overweight and obesity among children is associated with a range of psychological health issues including depression, low self-esteem and increased risk of infections. Childhood overweight and obesity is also a risk factor for several non-communicable chronic diseases in adulthood and later life such as diabetes, hypertension, musculoskeletal disorders and heart disease. It also impacts academic outcomes of school students, overall quality of life and has been linked to psychosocial factors such as weight-based teasing. Overweight then obesity is also responsible for deaths in later life as a complication of chronic diseases. There is a substantial direct and indirect economic burden attributed to childhood overweight and obesity. Studies have reported costs attributable to overweight and obesity are three times higher for men and nearly five times higher for women with a history of childhood overweight and obesity.

Causes of overweight and obesity

Overweight and obesity are primarily driven by a persistent imbalance in dietary energy intake and energy expenditure, and the excess consumption of “ultra-processed” foods high in calories, fats, free sugars and/or salt has been particularly implicated. However, overweight and obesity should not be viewed entirely in isolation from other forms of malnutrition. Rather, the various forms of malnutrition, and risks thereof, are intertwined throughout the life cycle. Under nutrition can give rise to increased risk of overweight later in life, especially when confronted with the obesogenic environment. The main risk factors for overweight and obesity in school age children are summarized here.

1. **Maternal and paternal overweight**- Maternal overweight and/or diabetes before and during pregnancy predispose the child to increased fat deposits, which in turn are associated with child obesity and metabolic disease – including high blood pressure, high density lipoprotein cholesterol and excess abdominal fat – later in life. There is also increasing evidence that paternal overweight during spermatogenesis could increase the risk of overweight in children.

2. **Maternal under nutrition and under nutrition in early life-** Maternal thinness before and during pregnancy can result in poor foetal growth, low birth weight and stunting in early life, which can predispose children to accumulate fat later in life, thereby increasing the risk of overweight, obesity and metabolic disease. In children who were small at birth (LBW), rapid weight gain after the age of 2–3years can lead to a higher risk of overweight and chronic disease in later life. Wasting in the first two years of life can also be a risk factor for overweight and non-communicable diseases (NCDs), also referred to as thrifty growth (Barker's hypothesis).

3. **Inadequate breastfeeding practices-** Breastfeeding (be it ever breastfeeding, exclusive breastfeeding or a longer duration of breastfeeding) reduces the risk of overweight. A recent meta-analysis calculated a 13 percent reduced chance of overweight for children who were breastfed.

Among the pathways for the protective role of breastfeeding is better gut health, achieved by population of the child’s body and gut with maternal microbiome during skin-to-skin contact and early and exclusive breastfeeding. Breastfeeding also establishes better satiety patterns which are related to the nutrients in breastmilk. It also helps avoid the disadvantages of bottle feeding.

4. **Improper complementary feeding practices and food habits in older children**. Contributing to poor diets are foods and liquids for children aged 6-23 months that do not secure the minimum dietary diversity and/or foods with a high content of sugar, salt or fat. They predispose children to overweight and unhealthy food preferences in later life. Furthermore, feeding practices that are not responsive to children's hunger and satiety cues can contribute to unhealthy eating patterns.

5. **Unhealthy food habits in their children life**- These are being increasingly documented and contribute to overweight. Children are developmentally and socially vulnerable to unhealthy diets. They are often more impulsive and they are typically more subject to peer influence, and are less likely to follow guidance on healthy eating.

6. **Obesogenic food environments-** Major drivers of food choice include price, availability, convenience, product taste and marketing. Unhealthy food environments include: a) low availability, accessibility, desirability and affordability of healthy foods b) marketing of unhealthy foods, snacks and beverages, and increasing portion size and c) inadequate labelling of industrially-prepared foods that prevents caregivers, children and adolescents from understanding whether such foods contribute to a healthy diet or not. Recurring exposure to the same unhealthy food environment can shape preferences and lead to routine or habitual behaviours.

7. **Inadequate physical activity-** There is incontrovertible evidence that predictors of overweight and obesity in children are: a) lack of physical space or opportunity for an active lifestyle or physical exercise and sports; and b) increasing acceptability of sedentary behaviours and screen time among children from early childhood through middle childhood.

8. **Obesogenic cultural environments-** are characterized by low levels of parental knowledge about healthy feeding, eating and nutrition; low levels of nutrition literacy among school-age children, adolescents, teachers, and health professionals; and social norms pertaining to body image that include appreciation of overweight body shapes for boys and/or girls.

9. **Epigenetic mechanisms –** changes in gene function caused by external or environmental influences – possibly also play a role in the relationship between parental overweight and maternal under nutrition and overweight in children.

10. **Socioeconomic status**- determines income, and low income and lack of access to good quality food have an impact on the likelihood and severity of each of these risk factors. Overweight increasingly impacts poorer and more disadvantaged groups.

Chapter two

2.1. Program Beneficiaries

This programme is designed to address the problem of overweight and obesity in school age children who have age of 6 to 12 years in the next 15 years (2014 to 2029 E.C). The programme has multidirectional benefits from individuals who are overweight and obesity to the nation in different aspects including mental, social, physical, psychological, economical, ecological and other dimensions.

2.1.1. Direct Beneficiaries

- Individual children who have overweight and obesity.

2.1.2. Indirect Beneficiaries

- Families who have their children of overweight and obesity.
- Community and society in that area.
- Government
- Community health and nutrition workers
- Country or nation
- Health service organizations

Chapter three

3.1. Programme description

The programme has a set of activities to reduce overweight and obesity among children of age 6 to 12 years in the next 15 years. The programme will have three major tasks which are giving intervention or treatment, addressing nutrition education or counselling and adjusting the marketing plan together with other sectors.

It will have many responsible bodies in different sectors including primary health workers (nurses, midwiferist, pharmacists, public health workers, and anesthesias) for provision of intervention and treatment, community health workers (community nutritionists, public health nutritionists, health environmentalists, and others) for nutrition education and counselling, economists and other for marketing plan, and other sector workers for their direct or indirect involvement to alleviate the problem of overweight and obesity in children of age 6 to 12 years in Debre Markos town.

It assesses the resources and needs of the community, plans for each activity and delivers services to the community as planned. Assessing of the resource will focus on human, financial, physical and other resources for encouraging community members to consider the community's assets and how to use them, to make decisions about priorities for program or system improvement given to the community, to involve community members from the very beginning of the process and it has a great opportunity to use community-based participatory research. This community based research and reduction of overweight and obesity have a lot of advancements such as children experiencing overweight and obesity in the population are more liable to be willing to talk and give straight answers to researchers and data gatherer to whom they know, or whom they know to be in circumstances similar to their own, than to outsiders with whom they have little in common. Conducting community based research is also important to provide you with a more accurate picture of the intervention or initiative and its effects of overweight and obesity in children. Programme will also assess the needs of the community by collecting, analyzing and making available information about the nutritional status of the children’s age of 6 to 12 years old.

Assessing the need of the community begins by defining the problem, setting the parameters of the assessment, and determining what type of data must be collected to draw a picture of the children's nutritional problem of overweight and obesity. It will also set priorities about the problems by different criteria including frequency, duration, scope or range, severity degree, feasibility, population and government concern. This assessing of the needs of community is important for identifying the problem of overweight and obesity in children's age 6 to 12 years that is not being addressed, identifying how the problem of overweight and obesity is developed in Debre Markos town, identify the programs and services to alleviate overweight and obesity including the reasons for failure of the programs and services to alleviate the problem, and the activities should be done to improve the nutritional status of children in case of overweight and obesity.

3.2. Goal and Objectives

3.2.1 Goal

The goal of programme is to reduce overweight and obesity in children's of age 6 to 12 years.

3.2.2. Objectives

General objective

- To reduce the problem of overweight and obesity among children of age 6 to 12 years in Debre Markos town, east Gojjam zone, Amhara region, Ethiopia by the end of 2029 E.C.

Specific objectives

- To identify the associated factors of overweight and obesity in children of age 6 to12 years.
- To identify the prevalence of overweight and obesity in children of age 6 to12 years.
- To identify and reduce major causes of overweight and obesity in children of age 6 to 12 years.

3.2.1. Strategies for Achieving the Objectives

To decrease the problem of overweight and obesity in children age of 6 to 12 in the next 15 years, it is important to reduce the risk factors that lead to it. The major factor from the beginning is maternal malnutrition

Strategic objective 1: Improve the nutritional status of women's age of 15 to 49 (reproductive age) years old.

Due to the health-related risk factors, overweight and obesity has become a major health challenge globally. The prevalence of overweight and obesity among women of childbearing age has been increasing over the past years. Maternal obesity is associated with increased risks of pregnancy outcomes and childhood obesity. In addition, excessive gestational weight gain has a negative influence on outcomes of maternal, foetal and childhood periods. Complex interactions, including a wide range of environmental and genetic factors can lead to overweight and obesity. Alterations in the metabolic environment during critical periods of organ development can lead to the development of metabolic disorders. During critical periods of foetal development, permanent changes occur in molecular, cellular, metabolic, neuroendocrine and physiological systems as a result of an unfavourable nutritional and/or hormonal environment. For that reason, adverse alterations in the maternal nutritional environment during the foetal period have important effects on long term overweight and obesity. Maternal overweight, obesity and/or diabetes before and during pregnancy predispose the child to increased fat deposits, which in turn are associated with child obesity and metabolic disease – including high blood pressure, high density lipoprotein cholesterol and excess abdominal fat – later in life. There is also increasing evidence that paternal overweight during spermatogenesis could increase the risk of overweight and obesity in children.

2019 Targets

- Reduce the proportion of women of reproductive age with BMI less than 18 by 32 %.
- Reduce the proportion of new-born with low birth weight (less than 2.5kg at birth) by 25%.
- Reduce the proportion of women of reproductive age with BMI > 24.9 by 40%.

- Reduce the proportion of women of reproductive age with diabetes by 21%.
- Increase the proportion of women of reproductive age who attained ANC and PNC by 35%.

Result: Improved nutritional status of women of reproductive age (15 to 49 years).

Initiatives

I. Improve Nutritional status of Pregnant and Lactating Women

1. Provide comprehensive and routine nutritional education, counselling and assessment services.

- Identify and treat severe and moderate acute malnutrition (SAM and MAM) in PLW.
- Identify and treat PLW who have overweight, obesity and DM.
- Conduct nutritional assessments and provide counselling services for pregnant women during antenatal care (ANC) visits and at any other health contact points.
- Conduct nutritional assessments and provide counselling services for lactating women during postnatal visits and at any other health contact points.
- Promote engagement of husbands, grandparents and other household members who play key roles in providing continuous care of selection of good nutritious food for PLW.
- Provide malnourished pregnant and lactating women (PLW) with targeted supplementary food and Provide PLW with blanket supplementary food support in special circumstances.

2. Conduct social and behavioural change communication on maternal nutrition.

- Promote maternal nutrition, including adequate intake of diversified foods, daytime rest and additional meals during antenatal periods.
- Identify and support competition to serve as role models to support the nutrition of women.

- Promote shifts in social norms on food taboos through religious leaders and influential community members to realize proper nutrition for pregnant and lactating women.
- Promote personal hygiene, environmental sanitation and infection-prevention measures.

3. Strengthen mobile health and proper nutrition teams to improve access to proper nutrition services in pastoralist areas.

4. Ensure access to reproductive health services.

5. Support women's empowerment.

- Strengthen women's economic control.
- Strengthen women's ability to have equitable decision-making power to improve their own nutritional status and that of their households.

II. Improve the nutritional status of non-pregnant and non-lactating women.

- Promote adequate intake of diversified food.
- Ensure access to reproductive health services.
- Ensure the economic empowerment of women.

Strategic objective 2: Improve the nutritional status from childbirth up to 12 years.

Overweight and obesity in children and adolescents is the result of the interaction between individual factors that regulate physiological processes, food preferences, and physical activity patterns over the life course and an obesogenic environment that promotes high energy intake and sedentary behaviour.

Overweight and obesity is primarily driven by a persistent imbalance in dietary energy intake and energy expenditure, and the excess consumption of "ultra-processed" foods high in calories, fats, free sugars and/or salt has been particularly implicated. However, overweight and obesity should not be viewed entirely in isolation from other forms of malnutrition. Rather, the various forms of malnutrition, and risks thereof, are intertwined throughout the

life cycle. Under nutrition can give rise to increased risk of overweight later in life, especially when confronted with the obesogenic environment.

2019 Targets

- Increase the proportion of children 6-23 months with minimum dietary diversity score by 54%.
- Reduce the proportion of women who deliver in health services and deny starting initiation of breastfeeding to 0%.
- Reduce nonexclusive breast feeding by 40%.
- Increase appropriate complementary feeding practice.
- Increase the number of children and their families who have an adequate knowledge of good food habits of children.
- Increase the number of children who have performing daily regular physical activities.
- Increase per capita income of children's families.

Result 1: Improved nutritional status of infant and young children 0-23 months.

Initiatives

1. Promote, support and protect optimal breastfeeding practices for infants 0–6 months at community and facility level through individual and group counselling.

- Counsel pregnant women, partners, family members and other influential community members on optimal breastfeeding practices.
- Promote initiation of breastfeeding within 1 hour of birth, use of colostrum and avoidance of prelacteal feeds.
- Promote and support exclusive breastfeeding for the first 6 months.
- Establish a baby friendly health facility initiative in all public and private health facilities.
- Promote designated breastfeeding rooms in major service providing institutions.

- Support breastfeeding working mothers to exclusively breastfeed until the child is 6 months old.

2. Build the capacity of service providers on complementary feeding for children aged 6-23 months.

- Timely initiation of age-appropriate complementary foods at 6 months of age.
- Continued breastfeeding until age 2 and beyond.
- Active and responsive feeding for children 6-23 months old with the involvement of fathers and influential family members.

3. Develop and enforce minimum standards on nutritional services for young children in special situations.

4. Support local production of enriched complementary food.

- Assess and identify recommended complementary feeding options for different communities.
- Promote local production of complementary foods meeting acceptable standards and using a variety of mechanisms.
- Harmonize tested procedures for local production of complementary foods.
- Promote and demonstrate the preparation and utilization of diversified complementary foods.

5. Promote key actions for diversification and utilization of complementary foods at household level.

6. Conduct monthly growth monitoring and promotion for children less than 2 years.

- Promotion of essential nutrition actions (ENA).

7. Prevent and control overnutrition and undernutrition.

- Identify and treat overweight and obesity.
- Promote the use of fortified foods (edible oil and flour).
- Treat nutrition and non-nutrition related health problems.

8. Detect and manage common childhood illnesses especially less than 2 years early.

- Ensure HEWs conduct routine screening and referral of children with chronic severe obesity.
- Promote active case finding and management for malnutrition and childhood illness in the community.

9. Ensure universal access to WASH and utilization of WASH practices.

- Ensure access to clean and safe water.
- Promote the use of household water treatment practices.
- Promote safe and hygienic preparation and handling of food.

10. Increase the number of schools that practice school feeding programs.

- Make the government to advance economically to reach people to open catering schools.
- Educate the community about the importance of school feeding programs and advise the family to enrol their children to catering school.

Result 2: Improved nutritional status of infant and young children 23-54 months.

Initiatives

1. Promote appropriate feeding and dietary practices.

- Ensure that households with children under 5 are linked to initiatives that promote home/kitchen gardens and small scale food production that substitute manufactured foods.
- Reduce the bad feeding practice of like Regularly eating high-calorie foods, such as fast foods, baked goods and vending machine snacks, Candy and desserts , and more and more evidence points to sugary drinks, including fruit juices through Preschool teaching methods.

2. Detect and manage early overweight and obesity.

- Regularly screen and identify children who have overweight and obese and have risk of it.
- Train health workers and health extension workers on identification and treatment early overweight and obesity.
- Educate the community about causes and consequences of overweight and obesity in their children's later life.
- Train special well trained dietician to educate the community about healthy eating plan and regular physical activity, changing their habit of eating, and follow weight-management programs.
- Address the service of special diets, weight-loss medicines, weight-loss devices, bariatric surgery as required.

3. Integrate Early Childhood Care and early detection together with existing community and facility based child nutrition programs.

- Promote appropriate adult-child interaction.
- Ensure the development and utilization of locally relevant (ECE) early childhood education materials.

4. The psychological and emotional make up, and service address for child for their regular and recommended physical activities.

- Learn the children about physical activities by imagination that fosters cognitive and social development.
- Address and prototype the service for playing of physical exercise full games like outdoor play set, active play mech, and like equipment.

5. Ensure universal access to WASH and utilization of WASH practices.

- Ensure access to clean and safe water.

- Promote the use of household water treatment practices.
- Promote safe and hygienic preparation and handling of food.

Result 3: Improved nutritional status of children ages 5-12 year.

1. Promote good nutrition behaviour and improved nutritional status of children 5-12 years old in school.

- Conduct school based health and nutrition social and behaviour change communication for young children.
- Train teachers and Parent-Teacher Association members in core child nutrition areas and raise awareness on child nutrition and health services in the community.
- Learn how to choose healthier foods in school by education program through imagination formation.
- Promote healthy school environments through school health and nutrition programs.
- Participate children in physical activity at school.

2. Promote exercise for preventing childhood overweight and obesity.

- Address and prototype services for physical activity of children in the community.
- Select good role model child's and educate and counsel others by the role model's lifestyle.
- Promote, appreciate and reward families who buy the equipment for playing of their children.
- Promote the establishment of physical activity and nutrition clubs in town.

3. Detect and manage early overweight and obesity.

- Regularly screen and identify children who have overweight and obese and have risk of it.
- Train health workers and health extension workers on identification and treatment early overweight and obesity.

- Train teachers about early detection, identification and counseling of overweight and obesity.

Result 4: Promoted healthy lifestyle and nutrition

Initiatives

1. Promote public awareness on healthy dietary behaviours and physical activities.

- Develop standardized health and nutrition messages on healthy dietary behaviors.
- Disseminate national nutrition, dietetics and healthy life guidelines to promote healthy dietary lifestyles.
- Produce and disseminate IEC and behaviour change communication (BCC) materials on healthy diet and physical activity.
- Disseminate IEC/BCC materials to promote increased consumption of fruits and vegetables, reduced consumption of soda beverages, saturated fats and trans-fatty acids.
- Conduct school based health promotion to encourage healthy diet and avoid childhood overweight and obesity leading life styles.
- Train HEWs (both urban and rural) on diet, physical activity.
- Promote EBF and CF with continuation of breastfeeding to age 2 and beyond.
- Develop town based food guide pyramids for different religion and cultural settings.

2. Provide nutrition assessment and counselling services (NACS) at the community and health facility level.

- Support facilities to integrate NACS into pediatric services for children under five and into adult outpatient services to identify overweight and obesity.
- Provide periodic nutritional screening and counseling of students for early identification of obesity and overweight at school.
- Provide periodic nutritional screening and counseling to women at youth friendly reproductive health clinics for early identification of obesity and overweight.

- Support community level facilities to provide nutritional screening and counseling for early identification of obesity and overweight.

3. Create and promote for external environments that enhance physical activity in schools, at workplaces and in communities.

- Ensure that schools have safe and accessible facilities for active recreation, play and sports.
- Encourage schools to provide students with daily physical education and to equip themselves with appropriate facilities and equipment.
- Establish nutrition clubs within communities, schools and workplaces.

4. Control local marketing in its relation with overweight and obesity.

- Educate and assist another work for fast and unhealthy food and drink sellers.
- Impose taxation on fast and unhealthy street foods and drinks.

Result 5: Improved nutrition communication

It is the process by which nutrition knowledge is converted into dietary change. Nutrition communication then includes nutrition education--the process by which people are informed, and sometimes empowered by, nutrition information--but also other actions taken to improve peoples' diets such as restricting misinformation about nutrition or manipulating the composition, availability or price of foods. Dietary goals for populations and food-based dietary guidelines for individuals constitute the starting point for nutrition communication, and if these could be more evidence-based we would be in a much stronger position to develop more effective nutrition communication.

Initiatives

1. Promote healthy nutrition through media (Radio, newspapers, posters, social media, websites, etc.).

- Utilize available media outlets to promote optimal nutrition behavior.
- Engage media to take nutrition as a social responsibility agenda item.

- Engage media to take children physical exercise and healthy feeding habit as a social responsibility agenda item.
- Provide nutrition training for media personnel, including local and school mini-medias.
- Protect the public from media based commercial pressures (advertisements) that are against optimal nutrition practices.
- Provide media based opportunities for open dialog between the general public and nutrition professionals.

2. Deliver nutrition education and communication through different styles that are identified as namely informational, reference, motivational, confrontational and holistic style.

- Provide different mode of learning based on psychological need.
- Share finding assessment of acceptance of their learning in different modes or styles.

Strategic objective 3: Improve multispectral coordination to implement the program

Despite significant progress, coordination and structural accountability for nutrition activities and outcomes across and within sectors remain challenges. Though of political need, nutrition program activities need a great coordination of many sectors. Malnutrition include overweight and obesity need a great coordination because it has multiple determinants (biological, social, cultural, economic) so these and like factors are eliminated by multiple sector active involvement. Sectorial members would be held accountable, both institutionally and collectively, for the achievement of the nutrition goals and targets set by this program.

2019 Targets

- The town will establish and strengthen kebele level nutrition coordination platforms.
- Town nutrition coordinating bodies and technical committees will be established and strengthened in all kebele.
- Town marketing plan in case of street junk and fast food controller committee will be established.

Result 1: System capacity strengthened for improved program implementation

Initiatives

1. Strengthen the capacity of dietitian, community, public and clinical nutrition and food analysis laboratories to participate in overweight and obesity reduction.

2. Provide training on nutrition problem overweight and obesity monitoring and evaluation for staff across different sectors.

3. Establish one nutrition information system to monitor nutrition interventions across sectors.

4. Strengthen the capacity of program implementing sectors in overweight and obesity monitoring and evaluation.

5. Strengthen the capacity of sectors, training and research institutions to undertake operational research on overweight and obesity.

3.3. Major activities of the program

The designed program has goal of reducing overweight and obesity, so that to achieve this goal it needs major and minor tasks in all different sectors which are responsible for it. Community nutritionists mainly and others assesses the resources and needs of the community.After assessing the resources and needs there are also program planers and public health nutritionists which design plan each individual activity to be performed to reduce the problem of overweight and obesity. The program has three different major activities to be implemented throughout the time period. These are nutrition education or counselling, intervention or treatment and marketing plan.

Nutrition education and counselling

Nutrition education programs within schools try to create behaviours that prevent students from potentially becoming obese, developing diabetes and cardiovascular issues, and forming negative emotional issues by educating students on the aspects of a healthy diet, emphasizing the consumption of lower fat dairy options.

Although in this part major participant are community health workers all level of each sector participate to announce the problem causes and consequences of overweight and obesity. Eat regular meals, even if they have been prescribed fortified blended food, which is meant to supplement the home diet, eat not only cheap staple foods to provide energy and protein, but also foods from all food groups, and eat foods with essential fatty acids (fish and shellfish, oil, pumpkin seeds, sunflower seeds, and leafy vegetables) are the common education for each sector but first line nutrition sectors educate and counsel deeply about the problem by taking assessment as the problem requires. Educating on the nutritional status and its factors as from conception to all pregnancy periods, post-delivery, up to six months and all other later life of children as:

- Normal healthy, well-nourished pregnant women should gain between 10 kg and 14 kg during pregnancy to increase the likelihood of delivering a full-term infant.
- Breast milk can provides all the food and water an infant needs for the first 6 months of life.
- Breastfed infant has lower risks of illness and death from diarrheal disease and pneumonia, reduced incidence of allergies and otitis media (ear infections), and in later life, reduced incidence of overweight, obesity, and some chronic diseases
- Complementary feeding should begin when infants reach the age of 6 months then should be offered semi-solid foods and gradually introduced to the regular family diet by the age of about 1 year, with continued breastfeeding until they are around 2 years or older
- Experiencing good habit of eating after weaning in order to protect their child from giving fast and unhealthy foods.
- Undertaking physical exercise in pregnancy as far as required.
- Experience habit of exercise in children as their age, sex and ability,….and in any problem related to overweight and obesity on interference.

Intervention or treatment

Health workers are major participants in treatment and divide each level of treatment as primary, secondary and tertiary. Common treatments for overweight and obesity include losing weight through healthy eating, being more physically active, and making other changes to your usual habits. Weight-management programs may help some people lose weight or keep from regaining lost weight. Some people who have obesity are unable to lose enough weight to improve their health or are unable to keep from regaining weight. In such cases, a doctor may consider adding other treatments, including weight-loss medicines, weight-loss devices, or bariatric surgery.

Marketing plan

Marketing plan describes precisely how and in what form the nutrition and health messages will be delivered to the target population. Its efforts should begin three weeks before the start date of the program. This means it will be marketing the program over the course of three weeks. The first week will be a warm up week, the second week will be more of a strategic week, and the third week is where we will be going all-in with our marketing efforts and in these steps there is involvement of Blogging, Social Media, Email and Lead Magnet.

Table 1: Objectives, Activity and Responsible Body

No_	Objectives	Strategic objective	Activities	Duration	Major Responsible body
1	Improve the nutritional status of women's age of 15 to 49 (reproductive age) years old	I. Improve Nutritional status of Pregnant and Lactating Women	1. Provide comprehensive and routine nutritional education, counselling and assessment services.	September 2 to march 2 2024 E.C	Community nutritionist Public health nutritionist Family
			2. Conduct social and behavioural change communication on maternal nutrition.	March 3 to April 3 2024 E.C	Community nutritionist Family
			3. Strengthen mobile health and proper nutrition teams to improve access to proper nutrition services in pastoralist areas.	April 4 to August 4 2024 E.C	Agriculture workers Nutritionists
			4. Ensure access to reproductive health services.	Sep 2 2014 E.C to august 30 2029 E.C	Midwife and Obstetrician Nurses

					Family
			5. Support women's empowerment.	Sep 2 2014 E.C to august 30 2029 E.C	All sector of gov't body
		II.Improve Nutritional status of non-Pregnant and non-Lactating Women	1 Promote adequate intake of diversified food.	Sep 2 2014 E.C to august 30 2029 E.C	Dietician Nutritionist Family
			2. Ensure access to reproductive health services.	Sep 2 2014 E.C to august 30 2029 E.C	Midwife and Obstetrician Nurses
			3. Ensure the empowerment of women.	Sep 2 2014 E.C to august 30 2029 E.C	All sector of gov't body
2	Improve the nutritional status from childbirth up to 12 years.	I. Improve nutritional status of infant and young children 0-23 months.	1. Promote, support and protect optimal breastfeeding practices for infants 0–6 months at community and facility level through individual and group counselling.	March 2 2014 E.C to august 30 2029 E.C	Midwife Nutritionist HEWs Family
			2. Build the capacity of service providers on complementary feeding for children aged 6-23 months.	March 2 2014 E.C to august 30 2029 E.C	Community nutritionist Nurse HEWs
			3. Promote key actions for diversification and utilization of complementary foods at household level.	March 2 2014 E.C to august 30 2029 E.C	Community nutritionist Dietician HEWs

			4. Conduct monthly growth monitoring and promotion for children less than 2 years	March 2 2014 E.C to august 30 2029 E.C	Nutritionist Dietician HEWs
			5. Ensure universal access to WASH and utilization of WASH practices	March 2 2014 E.C to august 30 2029 E.C	HEWs Health environment alist Family
		II. Improve nutritional status of infant and young children 23-59 months.	1. Promote appropriate feeding and dietary practices	March 2 2014 E.C to august 30 2029 E.C	Nutritionist Dietician Trained HEWs Family
			2. Detect and manage early overweight and obesity.	Sep 2 2014 E.C to august 30 2029 E.C	Nutritionist Dietician PH Nurse Surgeon Pharmacist Aesthesia Family
			3. Integrate Early Childhood Care and early detection together with existing community and facility based child nutrition programs.		
		III. Improve nutritional status of children ages 5-12 year	1. Promote good nutrition behaviour and improved nutritional status of children 5-12 years old in school.	Sep 2 2014 E.C to august 30 2029 E.C	Nutritionist Dietician Teachers Family
			2. Promote exercise for preventing childhood overweight and obesity		
			3. Detect and manage early overweight and obesity	Sep 2 2014 E.C to august 30 2029 E.C	Nutritionist Dietician

					PH Nurse Surgeon Pharmacist Aesthesia Family
3	Promote healthy lifestyle and nutrition	I. Improve the life style and nutrition	1. Promote public awareness on healthy dietary behaviours and physical activities.	September 2 2014 to march 2 2024 E.C	Nutritionist Dietician HEWs Family
			2. Create and promote for external environments that enhance physical activity in schools, at workplaces and in communities.	September 2 2014 to march 2 2024 E.C	Nutritionist HEWs Family
			3. Control local marketing that deliver unhealthy feeding in its relation with overweight and obesity.	September 2 to march 2 2024 E.C	Police Nutritionist Community as a whole
4	Improve nutrition communication	I. Improve healthy nutrition through media	1. Promote healthy nutrition through media	Sep 2 2014 E.C to august 30 2019 E.C	Public media Website Social media Mini-medias

			2. Engage media to take children physical exercise and healthy feeding habit as a social responsibility agenda item.	Sep 2 2014 E.C to august 30 2029 E.C	Social media Mini-medias

3.4. Expected program output and outcome

Outputs

As set of activities planned in their time and responsible body in each objectives, there are a number of outputs which will have gotten early from the end of program. Outputs are data about activities and are the direct results of program activities**.** They are usually described in terms of the size and/or scope of the services and products delivered or produced by the program. They indicate if a program was delivered to the intended audiences at the intended "dose." The expected outputs from the program are:

- HCWs trained community about the cause and consequence of overweight and obesity.
- Services and equipment's addressed for modification of life style.
- Children who are received treatment for their overweight and obesity.
- Families acquire adequate knowledge how to feed their children.
- Children change their behaviour due to imaginational learning.
- Assessment and any counselling improved in women and children
- Community acquire knowledge about unhealthy food and their consequence to obesity ….and others

Outcome

Outcomes examine what a program or process is to do, achieve, or accomplish for its own improvement and/or in support of institutional or divisional goals: generally numbers, needs, or satisfaction driven.

The expected outcomes from the program are:

- Children reduced their unhealthy feeding habit and recover from their overweight and obesity or being risk.
- Decreased in number of children assessed and considered as overweight and obesity.
- Improved good practice of healthy life style and physical exercise.
- Nutritional status of women of reproductive age improved…and others.

Table 2: Expected Program output and outcome

No_	Objective	Output	Outcome	Indicators	Remark
1	Improve the nutritional status of women's age of 15 to 49 (reproductive age) years old	I. HCWs trained community about the cause and consequence of overweight and obesity.	Community practice good health and nutrition habits.	Prices of critical food items, Prices of cash crops, Cash-crop production	
		II. Services and equipments addressed for modification of life style.	Community uses the addressed services and equipments in properly.	Mortality rate Good housing Accessibility of food through family.	
		II. Families acquire adequate knowledge how to feed women.	Family feed women in good manner	Test about their education and counselling	

		IV. Good assessment and any counselling improved in women.	Continuous check up and ready for assessment.	MUAC level in pregnant Pre pregnancy weight gain Post pregnancy weight loss	
2	Improve the nutritional status from childbirth up to 12 years.	I. HCWs trained community about the cause and consequence of overweight and obesity.	Community practice good health and nutrition habits of children.	Clinical protein-energy malnutrition and Mortality rate of children	
		II. Children acquire knowledge about bad and healthy life style.	Children change their behavior due to imaginational learning.	Proper wash Test about their education Length/height Weight	
		III. Good assessment and any counseling improved in women and children.	Continuous check up and ready for assessment.	MUAC GMP HAZ WAZ	
		IV. Families acquire adequate knowledge about how to feed their child	Proper feeding practice of children	Reduced in the number of children develop overweight and obesity.	

3	Promote healthy lifestyle and nutrition	I. adequate knowledge about the bad and healthy life styles	Practice of healthy life styles	Assessment of modification of life styles	
		II. Training on Control local marketing that deliver unhealthy feeding in its relation with overweight and obesity.	Reduced in numbers of children and women who eat unhealthy food.	Aspiration of healthy life style practice in women and children. Test on their education	
4	Improve nutrition communication	I. Promote healthy nutrition through media	Practice of healthy life style and good nutritional practice in women and children.	Aspiration of healthy life style practice in women and children. Test on their education	

3.5. Program partner their roles and financial requirement

Multispectral Capacity Building one of the challenges to multispectral nutrition programming is that the education and work experience of most program staff and practitioners usually revolve around just one sector, which tends to promote the continuation of traditional single-sector programs. Therefore, learning across sectors may require additional education and training. With this in mind, this program developed a number of capacity building and training resources to facilitate the sustainable integration of nutrition interventions into other sectors, such as agriculture, health and economics. Coordination was identified as a major theme in the program the key areas include ensuring visibility of high-level multi-sector nutrition commitments and reaching wide consensus on priorities formalisation of

coordination mechanisms donors' role in coordination broadening the focus of coordination efforts; developing both vertical and horizontal coordination establishing platforms for nutrition coordination, and the inclusion of non-traditional partners in coordination. There should be many sector involvements among the major one are:

1. Agriculture: Improving dietary diversity is an important goal in town with high levels of over nutrition and high poverty rates, especially in those where large numbers of children above 5 are overweight. A multispectral approach that includes the nutrition and agriculture sectors is essential to successfully improve dietary diversity.

2. Health and nutrition: it is major contributor for improvement of nutrition problem overweight and obesity in children. The professionals who work in this area contribute from education and counselling to tertiary treatment.

3. Other sectors: sectors like marketing and economics, education, public and private Medias and like have parallel role for the implementation of this program.

Financial requirement: the program in these three main sectors can have work division and its own average estimated budget. The sectors have role of nutrition education and counselling intervention and treatment and marketing plan roles. In each role there is average estimated amount of money allocated. Totally the program is designed to do these activities and responsibilities in 550,000(ETB).

Table 3: Financial requirement in each cost item and sector

No	Cost item	Estimated budget (ETB)			
	Individual work division	Total	Agriculture	Health and nutrition	Other sectors
1	Nutrition education and counselling	200,000	10,000	150,000	40,000

2	Intervention and treatment	250,000	20,000	200,000	30,000
3	Marketing plan	100,000	5,000	40,000	55,000

Phases of program

The program divided into two phases for suitability of monitoring and evaluation.

Table 4: Phases of program

Phases	Activities	Budget (ETB)	Duration
Phase one	Education, counselling, prototyping, service addressing, formative evaluation	150,000	From September 2 2014 to march 2 2021 E.C
	Assessment, GMP and other programs, marketing improvement, BCC.	100,000	
	Treatment and intervention start up and middle or process evaluation and monitoring	100,000	
Phase two	Education, counseling, prototyping, service addressing, Assessment, and other programs, analysis and creative actions	50,000	From march 3 2021 to August 30 2029 E.C
	Extensive intervention and treatment	120,000	

	Assessment, reward for role models, and Summative evaluation	30,000	

Program sustainability

Debremarkos town administration is committed to accelerating the implementation of this multisectorial, harmonized nutrition Program to make a strong impact on nutrition and on the overall wellbeing of the children age 6 to 12 years. So far, inadequate budget allocation, resource shortages, weak financial mobilization and low utilization have been the main challenges to implementing the Program. Implementation challenges therefore should be addressed in order to scale up and accelerating implementation through new nutrition and related strategies.

3.6. Monitoring and evaluation

The purpose of this program monitoring and evaluation is to determine and measure the amount of progress made for the program education, intervention and whether the program related goals/expected outcomes are being met. The aim is to promote more uniformity within the nutrition profession in assessing the effectiveness of overall nutrition intervention. To strengthen the monitoring and evaluation component of the program, implementing sectors will do the following:

- Integrate the recording and reporting of sex and age disaggregated women and children nutrition data within existing sectorial information systems.
- Develop a unified food and nutrition information system to capture appropriate nutrition result in children.
- Ensure incorporation of nutrition indicators in plans for each sector.
- Build the capacity of nutrition program implementing line.
- Develop a central food and nutrition information platform or databases for research, surveys and programmatic data that allow triangulation of information from all sectors.

Dissemination of monitoring and evaluation results

To inform decisions across the implementation system as well as the public at large, this program implementing sectors will disseminate information through the following mechanisms:

- Monitoring reports, which will be disseminated monthly, bi annually and annually.
- Evaluation and research findings, which will be disseminated through meeting, reports, workshop proceedings.

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Appendix

1. Study Information and Consent form in English

Debre Markos University, College of health science, department of human nutrition

Dear respondent: I am————————————————————.

I am here collect information from you on overnutrition and overweight and associated factors in school age children age of 6 to 12 and I am member of this program. The reason for conducting this assessment to this program is to have pertinent data and evidence for future plan and action for further improvement in the area.

The quality and quantity of information you provide determines the ultimate reliability and validity of the program. Your participation is mainly upon your consent and you don't have to answer any question you feel discomfort. However, it will help you in the proper implementation of children nutrition related program in this area and the country at large.

Do you agree to participate in the study by responding to the questions already prepared?

1. Yes Thanks her and continue the interview

2. No Go to the next respondent

Data collector's name.....Sign.....Date.....

Name of the Supervisor……..Sign……Date……

English version questionnaire

Part one: socio demographic factor

1. Age in completed years…….

2. Religion…….. Orthodox Catholic

Muslim Others (Specify):_____

Protestant

3. Children's family educational status …… 1. No formal education

2. Primary level (1-8)

3. Secondary level (9-12)

4. Tertiary level (College and Above)

4. Family size of HH (in number)…….

5. Do you have farm land? …….. 1. Yes

2. No

6. If questions No 5 is yes how much is your land size in kada?.....

Part two: life style factor

7. Do you have nutrition garden?..... 1. Yes

2. No

8. If question no 7 is yes which types?..... 1. Vegetable

2. Fruit

9. Have you perform any physical activity? ….....1. Yes……2. No

10. If yes in no 9. How many times per week?…… 1. Sometimes

2. Often

3. Never

11. Have you ever eat and drink street fast and junk food and beverage… 1.Yes……2. No

12. If yes in no11. How many times per week?.....

13. Have you information on nutrition?..... 1. Yes 2. N

14. What are the source of information?..... 1. Radio

2. TV

3. Books

4. Magazine

5. Others (specify)

አባሪ 3: - የጥናት መረጃ እና ስምምነት

ደብረ ማርቆስ ዩኒቨርሲቲ ፣ የጤና ሳይንስ ኮሌጅ ፣ የስነ ምግብ ዲፓርትመንት

ውድ ተጠሪ:——————————————— ነኝ

እኔ እዚህ የተገኘሁት ከስድስት እስከ አስራሁለት ዓመት ባሉት ልጆች ላይ የሚከሰተዉን ከመጠን በላይ ዉፍረትን ለመቀነስ ስለምግብ ሁኔታ እና ስለተጓዳኝ ነገሮችን ለማስተካከል ፕሮግራም ለመዘርጋት መረጃ ለመሰብሰብ ከእርስዎ እሰበስቤያለሁ እናም የዚህ ፕሮግራም አባል ነኝ ። ይህንን መረጃ ስብሰባ የማካሄድበት ምክንያት ለቀጣይ እቅድ እና ለተግባራዊነቱ በአካባቢያዊ ሁኔታ መሻሻል አስፈላጊ መረጃና ማስረጃ እንዲኖር ማድረግ ነው የሚሰጡት የመረጃ ጥራት እና ብዛት ፕሮግራሙን የመጨረሻ አስተማማኝነት እና ትክክለኛነት ይወስናል ። የእርስዎ ተሳትፎ በዋነኝነት በእርስዎ ፈቃድ ላይ ነው እናም ምቾት የማይሰማዎትን ማንኛውንም ጥያቄ መመለስ ግድታ የለብዎትም። ሆኖም በዚህ ዙሪያም ሆነ በአጠቃላይ በአገር ውስጥ ከአመጋገብ ጋር ተያያዥነት ያለው መርሃግብር በአግባቡ እንዲተገበር ይረዳዎታል ።

ቀደም ሲል ለተዘጋጁት ጥያቄዎች መልስ በመስጠት በጥናቱ ለመሳተፍ ይስማማሉ?

1. አዎ

2. አይደለም

የመረጃ ሰብሳቢው ስም ----------ፊርማ..... ቀን .....።

ስለሁሉም ነገር እናመሰግናለን

Amharic version questionnaire

የስነ ሕዝብ ሶሻል አወቃቀር

1. ዕድሜ በተጠናቀቁ ዓመታት …….

2. ሃይማኖት …… .ኦርቶዶክስ

ካቶሊክ

ሙስሊም

ፕሮቴስታንት

ሌሎች (ይግለጹ): _____

3. የልጆች ቤተሰብ የትምህርት ሁኔታ ……

. 1. መደበኛ ትምህርት የለም

2. የመጀመሪያ ደረጃ (1-8)

3. የሁለተኛ ደረጃ (9-12)

4. የከፍተኛ ደረጃ (ኮሌጅ እና በላይ)

4. የቤተሰብ መጠን (በቁጥር) …….

5. የእርሻ መሬት አለዎት? …… .. 1. አዎ 2. አይደለም

6. ጥያቄ ቁጥር 5 ላይ መለስዎ አዎ ከሆነ የመሬትዎ መጠን በቃዳ ስንት ነው? .....

ክፍል ሁለት፤ ከአኗኗር ዘይቤ ጋር ዝምድና ያላቸው

7. የአመጋገብ የአትክልት ቦታ አለዎት? ..... 1. አዎ 2. አይደለም

8. ጥያቄ 7 ላይ መልስዎ አዎ ከሆነ የትኞቹ ዓይነቶች ናቸው?

1. አትክልት

2. ፍራፍሬ

9. ማንኛውንም አካላዊ እንቅስቃሴ ያከናውናሉ? ..... 1. አዎ …… 2. አይ

10. አዎ ከሆነ በፍፁም 9. በሳምንት ስንት ጊዜ? ……

1. አንዳንድ ጊዜ 2. ብዙ ጊዜ 3. በጭራሽ

11. የጎዳና ላይ ምግብና ጤናማ ያልሆኑ ምግቦች ተብለዉ የሚባሉትን በልተውና ጠጥተው ያውቃሉ እና ከመጠን በላይ አላስፈላጊ ምግብ እና መጠጥ ... 1. አዎ …… አይ

12. አዎ ከሆነ በቁጥር 11። በሳምንት ስንት ጊዜ? .....

13. ስለ አመጋገብ መረጃ አለዎት? ..... 1. አዎ 2. አይ

14. የመረጃ ምንጭ ምንድን ነው? ..... 1. ሬዲዮ

2. ቴሌቪዥን

3. መጽሐፍት

4. መጽሔት

5. ሌሎች (ይግለጹ)