



Grenada Food Based Dietary Guidelines 2020



Technical Document

By the
Government of Grenada- Ministry of Agriculture and Lands
through the Grenada Food and Nutrition Council
with the technical support of
the Food and Agriculture Organization
of the United Nations

Table of Contents

Contents	Page No.
List of Acronyms	1
List of Tables	2
List of Figures	3
Chapter 1: Introduction	4
1.1 Grenada Food and Nutrition Council	4
1.1.1 Mission Statement	4
1.1.2 Vision Statement	4
1.2 Background to FBDGs 2006	4
1.3 Purpose of the Food Based Dietary Guidelines 2006	5
1.4 Food Based Dietary Guidelines, 2006	5
Chapter 2: Methodology	
2.1. Planning	8
2.2. Population Characterization	9
2.3. Definition of Objectives	9
2.4. Technical Guide Elaboration	9
2.5. Testing Feasible Recommendations and Developing a Graphic	10
2.6. Elaboration of FBDG 2006	10
2.7. Validation and Testing	11
2.8. Corrections and Adjustments	11

REFERENCES

- ¹Pena. M and Molina V. Food Based Dietary Guidelines and Health Promotion in Latin America, 1999, pp. 7-10
- ²Developing Food-based Dietary Guidelines: A Manual from the English-speaking Caribbean, FAO; 2007
- ³Nutrition Made Simple, Versada Campbell, 1994
- ⁴FAO/OMS/UNU. Human Energy Requirements. Report of a Joint FAO/WHO Expert Consultation. Rome: FAO; 2004, pp. 20-47
- ⁵Institute of Medicine 2005. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington, DC: The National Academies Press. pp. 769-789, <https://doi.org/10.17226/10490>.
- ⁶American Dietetic Association and the American Diabetes Association: Choose Your Foods Exchange List for Diabetes
- ⁷<https://drive.google.com/open?id=1FkJLJVosr-e1RuVEUiyGPTC7TpnYI3J->

2.9.	Implementation	11
2.10	Evaluation	11
Chapter 3:	Nutrition Situation Analysis	
3.1.	Country Profile	13
3.2.	Access to Nutrition Services	13
3.3.	Epidemiological Profile	
	3.3.1. Nutritional Status	14
	3.3.1.1. Infant and Young Children	14
	3.3.1.2. Preschool	15
	3.3.1.3. School Aged Children	16
	3.3.1.4. Iron Deficiency	18
	3.3.1.5. Low Birth Weight	21
	3.3.1.6. Adults and Elderly	21
3.3.2.	Mortality and Morbidity	22
3.4.	Food and Nutrition Security	24
3.5.	Conclusion	27
3.6.	Prioritization of Grenada's Main Nutritional Problems	27
Chapter 4:	Nutritional Goals Standard Diet Calculation	
4.1.	Food Groups	28
4.2.	Nutritional Goals and Standard Diet Calculations	29

4.2.1. Daily Recommended Intake (DRI) of Energy and Macronutrients by Age Groups	29
4.2.2. Diet Calculation by Age Group	32
Chapter 5: Technical Recommendations	35
5.1. Technical Recommendations	36
5.2. Message Comparison	39
5.3. Suggested Order of Messages	40
Chapter 6: Field Test	41
Chapter 7: FBDG Messages and Graphic	
7.1. Revised Messages	43
7.2. Final Messages	45
ANNEXES	47
Annex 1: Task Force Representatives	48
Annex 2: Working Group 2 Discussion Guide -Formulation of Technical Recommendations of Food Based Dietary Guidelines	49
Annex 3: Table of Analysis of Technical Recommendations	59
Annex 4: Field Test Instruments	60
REFERENCES	66

	foods), d) water and its location, e) exercise), f) non-recommended foods, h) regions, ethnicities and life cycle, i) border If you used this graphic to choose your food, what type of food would you eat in greater quantity and what type of food would you eat in less quantity?
Acceptability	What do they like or not about the image? Why? (Inquire to describe each part of the graph: (Inquire to describe each part of the graph: a) nutmeg b) foods (classification and variety of foods), water and its location, e) exercise), f) non-recommended foods, h) regions, ethnicities and life cycle, i) border
Suggestions	What would they change about the image so that it is better understood? What would they change about the image to make it more attractive or motivating?
Identity	Do you feel identified with the image? Why?

Second Validation Instruments

Message:

Category	Questions
Understanding	What do you understand by this message? What does this message recommend us to do? Is there a word you don't understand from this message? Which one? What word would you use instead?
Acceptability	Do you like the way this message is expressed, that is, the words used to say it? Why yes or why not
Suggestions	If you could make changes to this message, what changes would you make? What would you take away or what would you add?
General interpretation	In general, what do these messages and this graphic refer to? Do you think they are useful? Why yes, or why not?

GRAPHIC:

(Insert graphic here)	
Category	Questions
Understanding	Can you describe what you see in the picture? (Ask to describe each part of the graph: a) nutmeg b) foods (classification and variety of

List of Acronyms

CFNI	Caribbean Food and Nutrition Institute
DRI	Daily Recommended Intake
FAO	Food and Agriculture Organization of the United Nations
FBDG	Food Based Dietary Guidelines
GFNC	Grenada Food and Nutrition Council
INCAP	Institute of Nutrition of Central America and Panama
MOF	Ministry of Finance, Planning, Economic Development & Physical Development
MOH	Ministry of Health
MNIB	Marketing and National importing Board
NGO	Non-Governmental Organization
TEV	Total Energy Value
WHO	World Health Organization

List of Tables

Table1:	Nutritional status of children attending Day Care 2012 - 2016
Table 2:	Nutritional Status of Children Attending Day Care 2011& 2014
Table3:	No. of LBW Babies Delivered at The General Hospital 2014-2016
Table 4:	New Diagnosis of Hypertension and Diabetes Screened in Community Clinics 2012-2016
Table 5:	Top 10 Causes of Death in Grenada
Table 6:	Macronutrients and Caloric Content of the Food Groups
Table 7:	Age Ranks
Table 8:	Daily Recommended Intake (DRI) by Age
Table 9:	Nutritional Goals for Macronutrients % Total Energy Value (TEV)
Table 10:	DRI of Energy and Macronutrients by Age
Table 11:	Summary of DRI of Energy and Macronutrients by Age Group
Table 12:	Diet calculations by Age Group 1, 2-6 years
Table 13:	Diet Calculation by Age Group 2, 6-12 Years
Table 14:	Diet Calculation by Age Group 3, 12-18 Years
Table 15:	Diet calculation by Age Group 4, 18-60 Years
Table 16:	Diet calculation by Age Group 5, over 60 years
Table 17:	Number of Servings Per Food Group Recommended by Age Group
Table 18:	Technical Recommendations, Principles, Messages and Motivations
Table 19:	Comparison of 2005 FBDG and Revised Messages 2017
Table 20:	Focus Groups

FOCUS GROUP GUIDE TO TEST THE MESSAGES OF THE GUIDELINES

Recommendation:

Objective	Questions
Impression/Opinion	What do you understand by this recommendation? What is it asking us to do, how often?
Acceptance	What do you think of this recommendation? Why do you think so?
Approach to behavior	Have you heard this recommendation before? Is something similar done in your families? What is done?
Feasibility of implementing recommendation	What would you need to follow this recommendation? Do you think you could follow this recommendation? (Yes Why? – NO Why?) How often could you follow this recommendation?
Motivation / benefits	Why is it good to follow this recommendation? Why is it easy to follow this recommendation?
Barrier / Solutions	Why is it difficult to follow this recommendation? What changes would you make to the recommendation to implement it?
Intent	Would you put this advice into practice in your own family? Do you think other families in your community would like to put this recommendation into practice?
Suggestions	If you would like to convince the families of this community what would you say or how would you say?

Graphic Instrument

GRAPHIC VALIDATION OF FBDG IN FOCUS GROUPS

PARISH: _____

COMMUNITY: _____ Rural _____ Urban _____

DATE: _____ MODERATOR: _____

1. What do you see in this drawing? _____

2. In how many groups is the graphic divided? _____

3. Why do you think it is divided into different parts? _____

4. If you used this graphic to choose your foods, what food groups

Would you eat MORE and what food group you would eat LESS?

MORE _____

LESS _____

5. Can you tell us what foods are in these groups?

a. Staples: _____

b. Vegetables: _____

c. Fruits: _____

d. Legumes: _____

e. Food from Animals: _____

f. Fats and Oils: _____

8. Do you like the drawing of the graphic and the foods?

(YES) What do you like?

Why?

(NO) What do you do not like? _____

Why _____

9. Is there anything you would improve on this drawing?

10. What foods would you add to the graphic that you eat at home or in your community?

11. Do you think that this material would be useful for another person in your community? YES/ IF NOT

Why? _____

12. If a person asks you what you understood about this drawing, what would you say?

13. Which of the two Graphic do you prefer? One or Two _____

List of Figures

Figure 1: Food Based Dietary Guidelines 2006 Graphic

Figure 2: Steps for the revision and updating of the FBDG

Figure 3: Comparison of BMI, 2015 vis-à-vis 2016 Pre-Primary and Secondary School Students

Figure 4: Anemia among 1-Year olds Antenatal and Postnatal women

Figure 5: Anemia among school aged children (Grade 1 and Form 1)

Figure 6: Top 10 Causes of Death in Grenada from 2012 to 2016 by Age Group

Figure 7: Second field test graphic

Figure 8: Final Graphic

Chapter 1: Introduction

1.1. Grenada Food & Nutrition Council

Grenada Food & Nutrition Council (GFNC) has been promoting good nutrition since its establishment in 1980. As the leading provider of nutritional information for the State of Grenada, the Council is primarily concerned with providing dietary guidelines to improve the well-being and health outcomes of the population at the large. The core function of the organization is borne out in its mission and vision statements following.

1.1.1. Mission Statement

The mission of the Grenada Food Nutrition Council is as follows: -

“To promote the nutritional well-being of all segments of the population of Grenada, Carriacou and Petite Martinique through analyzing, managing and preventing nutrition-related problems and to enhance the quality of life of our people through the promotion of good nutrition and healthy lifestyle behaviors.”

1.1.2. Vision Statement

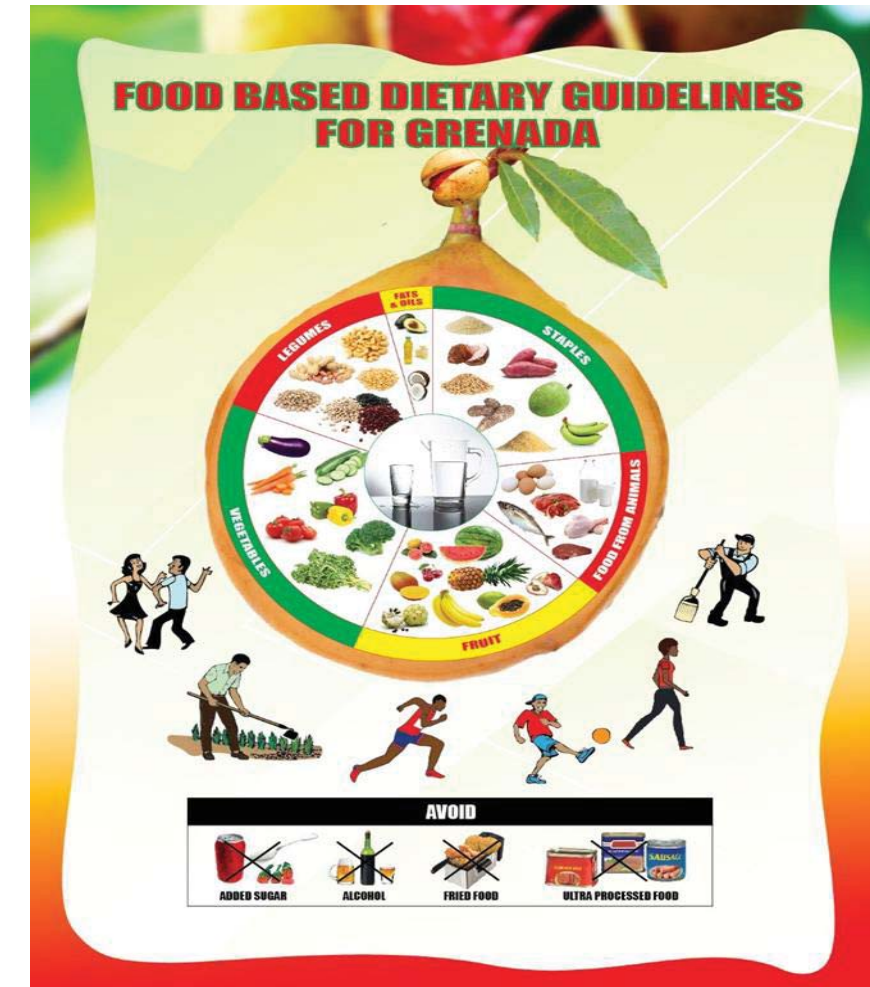
The following is the vision statement of the GFNC:-

“To be the leading provider of accurate and current nutrition information, delivering reliable services that optimally impact the nutritional status of the population of Grenada, Carriacou and Petite Martinique.”

1.2. Background to FBDGs 2006

Grenada’s first Food Based Dietary Guidelines (FBDG) were developed during the period 2004 to 2006, through a process led by the Grenada Food and Nutrition Council, in collaboration with the Food & Agriculture Organization (FAO), the Institute of Nutrition of Central America and Panama (INCAP) and the Caribbean Food and Nutrition Institute (CFNI). The key steps in the development of the guidelines were the following: -

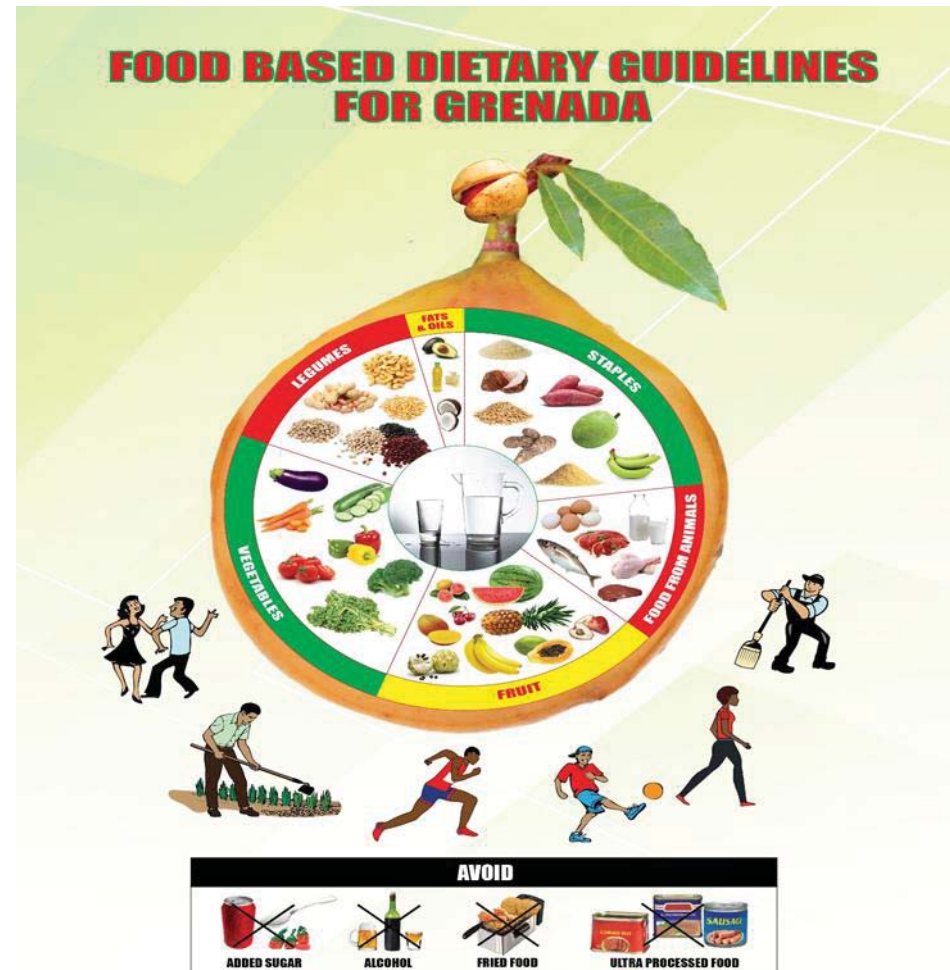
Graphic #2



Annex 4

Field Test Instruments

Graphic #1



- Careful analysis of the most prevalent diseases, particularly chronic non-communicable diseases, that were the leading causes of death in Grenada at that time
- Several- multi-sectoral consultations
- Development of a group of eight (8) messages and a graphic displaying the portion amounts for consumption of each of the six Caribbean Food Groups; an open nutmeg pod was used for the display of the graphic.
- Testing of the messages and graphic among a broad cross-section of the population - persons of varying education levels, socioeconomic status and age groups- to assess persons' understanding of the messages, the acceptability of the messages and feasibility of adherence to the messages.
- Finalization of messages and graphic based on feedback from the testing

In 2006, the guidelines were endorsed by the Cabinet and published.

1.3. Purpose of the Food Based Dietary Guidelines 2006:

The purpose of the Food Based Dietary Guidelines was to: -

- Guide the population on how to meet their nutritional needs
- Provide a guide for basic meal planning for the cohort of the population 2 years and older
- Identify food groups whose consumption should be encouraged, i.e. eat more of, or discouraged. i.e. eat less of
- Address the nutrition needs based on the country's health profile
- Promote the consumption of healthy food to assist in decreasing the incidences of the most prevalent diseases such as Cancer, Diabetes and Hypertension
- Serve as a guide for evaluating individual and population consumption patterns
- Encourage persons to eat healthily, locally and economically

1.4. Food Based Dietary Guidelines, 2006:

The following eight (8) messages and associated graphic (Figure 1), comprised the Food Based Dietary Guidelines 2006: -

1. Eat a variety of foods as shown in the diagram
2. Eat larger amounts of fruits and coloured vegetables
3. Eat less fatty, oily, greasy and barbequed foods
4. Use less salt, salty foods, salty seasonings and salty snacks
5. Choose to have less sweet foods and drinks
6. Drink more water. It's the healthier choice!
7. Drink little or no alcohol.
8. Be more physically active. Get moving.

Annex 3

TABLE OF ANALYSIS OF TECHNICAL RECOMMENDATIONS

TECHNICAL RECOMMENDATIONS	NUMBER OF TIMES THAT REPEATS
Eat a variety of foods daily/everyday	5
Eat more natural/ locally grown foods	1
Eat more lean meat	2
Eat a variety of fresh colored fruits and vegetables everyday	10
Use more fresh herbs and spices to season /flavor foods	6
Drink more water than highly processed drinks	5
Trim fat from meat before cooking/eating	1
Choose foods low in saturated fats, salt and sugar	8
Limit/avoid BBQ or charred foods	1
Avoid cooking with high flame	1
Eat less highly processed food	3
Get at least 30 minutes of exercise everyday	6
Grow vegetables/ seasonings at home	4
Drink Little or no alcohol	4
Do not smoke	1

IRON DEFICIENCY ANAEMIA	<p>vitamin b 6 deficiency b 12 low intake c</p> <p>mineral low iron</p>	<p>low consumption dark green leafy vegetables vitamin c lean/ organ meats / legumes</p> <p>high consumption of milk coffee tea</p>	<p>increased vegan lifestyle</p> <p>poor combination of foods</p> <p>meat not served to children</p> <p>vegetables are expensive</p> <p>vegetables taste bland</p> <p>belief – green banana high in iron meat consumption causes worms</p>	<p>eat fresh dark green leafy vegetables and fruits everyday</p> <p>eat foods high in iron everyday</p> <p>eat liver as a source of iron</p> <p>avoid having coffee, milk or tea when eating iron rich foods</p> <p>serve meats to children daily</p> <p>talk to a health or nutrition person before practicing a vegan lifestyle</p> <p>keep all appointments with doctor</p> <p>eat a variety of foods</p>
Health and Nutrition Problem	critical nutrient	critical food	practices / habits / beliefs related to the health & nutrition problem	technical recommendations
STROKE	<p>saturated fats (cholesterol) trans fats sodium refined carbohydrates (eg sugar, white flour, pasta)</p> <p>calcium potassium</p>	<p>high intake meat fatty foods highly/ultra-processed foods alcohol</p> <p>low intake vegetables fruits unsaturated fats fish whole grain cereals ground provisions</p>	<p>smoking</p> <p>high consumption of fats and fried foods</p> <p>sedentary lifestyle</p> <p>overweight/obesity</p> <p>poor eating habits overeating skipping meals</p> <p>belief –</p>	<p>eat a variety of foods</p> <p>include dairy foods for calcium and potassium</p> <p>limit food and drinks with added sugar and salt</p> <p>drink plenty water daily</p> <p>choose more lean meats</p> <p>eat different colour fresh vegetables everyday</p> <p>maintain healthy weight</p> <p>eat dried peas and beans at least twice a week</p> <p>manage stress</p> <p>get enough sleep</p> <p>choose low fat foods make physical activity a part of your daily routine</p>

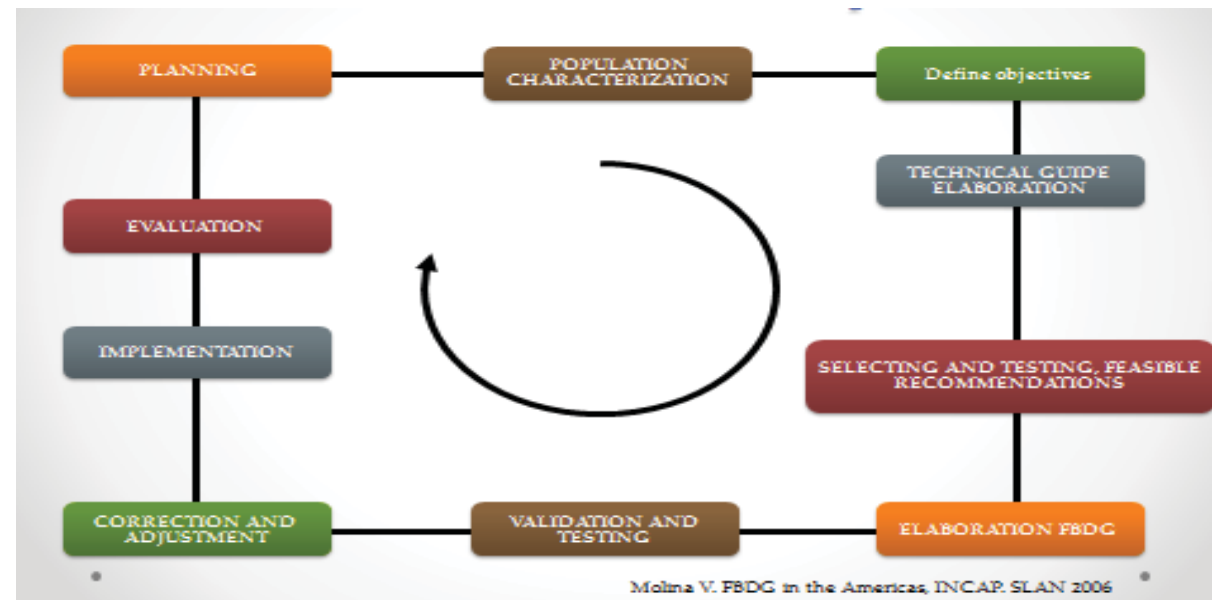
Figure 1: Food Based Dietary Guidelines 2006 Graphic



Chapter 2: Methodology¹

The revision of Grenada's FBDG 2006 was guided by the Food and Agriculture Organization (FAO) methodology. Figure 2, hereunder, summarizes the steps involved in the revision and updating of the *Guidelines 2006*.

Figure 2: Steps for the revision and updating of the FBDG



2.1. Planning²:

The planning for the revision of the Grenada's 2006 Food Based Dietary Guidelines began with identification of a coordinator for the formulation of a multi-sectoral committee (MSC). The Grenada Food and Nutrition Council, the lead body for nutrition and health, was deemed the appropriate body by the Ministry of Agriculture (MOA). Taking into consideration that the ideas and viewpoints of professionals from different areas and from different sectors would be critical to the revision process and to implementation in the various sectors, the committee was comprised of representatives from the public sector (agriculture, health, education, trade, social development, GFNC, MNIB, etc.), non-state sector (non-governmental organizations, university, Conferences of Churches, Grenada public health association, media association, Grenada Chamber of Industry and Commerce, etc.) and other regional and international agencies. In 2017, the MSC

Health and Nutrition Problem	Critical Nutrient	Critical food	Practices / Habits / Beliefs Related to the Health & Nutrition Problem	Technical Recommendations
HEART DISEASE	saturated fats (cholesterol) trans fats sodium refined carbohydrates (e.g. sugar, white flour, pasta)	high intake meat fat highly/ultra-processed foods alcohol low intake vegetables fruits unsaturated fats fish whole grain cereals ground provisions	smoking high consumption of fats and fried foods sedentary lifestyle poor eating habits overeating belief – hereditary	eat a variety of foods every day eat less fatty and fried foods make physical activity a part of your daily routine choose foods low in fat, saturated fat and cholesterol drink little or no alcohol do not smoke eat less highly processed foods maintain a healthy weight avoid foods with trans fat eat fresh vegetables and fruits everyday use more fresh herbs and spices to flavour/ season foods use less salt and salty seasonings in cooking use less ready-made salad dressings eat a variety of foods read food labels
Health and Nutrition Problem	Critical nutrient	critical food	practices / habits / beliefs related to the health & nutrition problem	technical recommendations

FORMULATION OF FBDG TECHNICAL RECOMMENDATIONS

Health and Nutrition Problem	Critical Nutrient	Critical food	Practices / Habits / Beliefs Related to the Health & Nutrition Problem	Technical Recommendations
CANCER	<p align="center">↑</p> saturated fats sodium refined carbohydrates (e.g. sugar, white flour, pasta) iron minerals vitamins unsaturated fats fibre	high intake meat fat highly/ultra-processed foods bbq meats alcohol low intake vegetables fruits liquid oils fish whole grain cereals ground provisions	less home cooking convenience taste availability / cost fried foods family tradition (cooking methods) poor eating habits belief – local foods are expensive fried foods taste better stigma attached to agriculture/farming processed foods more readily available and cheaper	eat a variety of foods every day eat more natural/ locally grown foods eat more lean meats eat fresh vegetables and fruits everyday use more fresh herbs and spices to flavour/ season foods drink more water instead of soft drinks and processed fruit drinks trim fats from meat before cooking/ eating choose foods low in saturated fat, salt and sugar limit or avoid eating bbq or charred foods avoid cooking with high flame eat less highly processed foods get at least 30 minutes of exercise every day grow vegetables/ seasonings at home

comprising of 25 persons was convened. Due to the fact that all members from the committee could not be expected to meet on a regular basis, a task force of eight was formed to guide the process. Both the MSC and the task force were headed by the Grenada Food and Nutrition Council, the coordinator for the revision of the FBDG. The first meeting of the MSC was held to introduce the committee members to the revision project, the current health and nutrition situation and the methodology to accomplish the revision.

2.2. Population Characterization:

The purpose of Population Characterization step was to diagnose the health and nutritional status of the group to whom the nutritional guidelines would be directed, taking into consideration the group’s access to food, eating habits and socio-cultural characteristics. The diagnosis was based on a review of existing surveys, reports and publications from the MOH, MOF, GFNC and other agencies. An initial two-day workshop, attended by the members of the MSC and led by the international FBDG consultant, facilitated the review. The identified problems were prioritized in terms of their scope, the feasibility of solving them, and their impact. The output of the step, population characterization, was a descriptive document that identified the risk factors and problems associated with the diet of the target group - the target group being healthy Grenadians aged 2 years and older.

2.3. Definition of Objectives

Following the step of population characterization, the objectives of the nutritional guidelines were set. The working groups at the first workshop developed guidelines that targeted each of the priority risks and problems identified during the step of population characterization. These guidelines aimed to promote healthy diets and lifestyles in order to reduce and/or prevent the identified risks and problems.

2.4. Technical Guide Elaboration:

A technical guide- for health and nutrition professionals - was developed. This guide summarized the nutritional goals, recommendations and other suggestions for the prevention of the health

problems identified during the population characterization. It elaborated the scientific basis that supports the nutritional guidelines.

The technical guide was completed by nutritionists at the second MSC two-day workshop. The following was determined: -

- Macro-nutrient and caloric recommendations for the population aged two and older.
- The food groups to be used
- The profile of nutrients from each food group and the size and number of portions for each age group to ensure appropriate food intake in terms of quantity and variety.

2.5. Testing Feasible Recommendations and Developing a Graphic:

Testing of the recommendations was achieved using focus groups to determine the willingness (ability and motivation) of the target population to fulfill the technical recommendations (guidelines). This testing process: -

- investigated whether or not the population was willing to and could meet the recommendations
- analyzed reactions to the guidelines.

A graphic design was developed by the MSC at the first meeting and subsequently adjusted at the first and second two-day workshops. The purpose of the graphic is to help the target group easily identify the variety and portions from the different food groups, foods that should be avoided and various types of physical activity.

The focus groups tested the following: -

- identified persons' motivation to implement the recommendations.
- the appropriate language to be used in the messages of the guidelines and
- the comprehension of the graphic by the identified persons.

The result of this phase was negotiation between technical theory and what was feasible from the standpoint of the target population.

2.6. Elaboration of FBDG:

			relaxation leading to increased BP Poor stress management	and women - 5 ounces of wine, 12 ounces beer and 1 ½ ounces rum/vodka/whiskey
			Disinterest in cooking meals at home	
			Change in lifestyle (busier than before) no time for cooking or exercise	
			Lack of screening (fear of doctors, or knowing if one is affected)	
			Rum culture (over consumption is norm)	

Health and Nutrition Problem	Critical Nutrient	Critical food	Practices / Habits / Beliefs Related to the Health & Nutrition Problem	Technical Recommendations
Hypertension	Excess Sodium	Excess Processed and Ultra Processed foods (preserved meats, fish, vegetables)	Inactive/ sedentary lifestyle	Increase planned physical activity (exercise) 30 – 40 minutes daily
	Excess Saturated Fats	Excess table salt during cooking and serving	Desire for a strong, salty taste in foods/ meals	Get involved in home family gardening (or container gardening) to reduce food bill.
	Excess cholesterol	Salty snacks and seasonings	Desire to have salty, cured fatty meats, poultry and fish in our local cuisine/meals) (salted pork, salted fish, back and neck etc.)	Education on reality of consequences /ills of hypertension (getting survivors to share their experiences with others and graphic images of condition)
	Insufficient Potassium	Insufficient fruits and vegetables, grains and legumes	Increased availability of fried and barbequed foods	Consume 6-8 cups of water or more (graphics to show) of water each day.
	Insufficient Water	Excess Alcohol	Preference for fried foods (bakes, chicken etc.)	Use raw fruits and vegetables and/or bake and steam as method of preparations most days of the week
	Insufficient fiber	Insufficient liquids and water intake	Boiling and soaking of foods that leech potassium	Remain with recommendations for 1 tsp of added salt daily and use more local herbs and spices to flavor foods
			Perceived cost of fruits and vegetables	Use more fresh local meats, fish and poultry in meals rather than cured meats.
			Actual cost of fruits and vegetables	Use at least five servings of fruits and vegetables combined/ Start with one at each meal if possible, Use them even as snacks. (use graphic to show 1 serving)
			Disinterest in planting/ starting family gardens	Get enough sleep, plan and manage short term goal, professional counselling to manage stress
			Lack of sleep,	Increase medical screening availability and stress importance of attending screening sessions (especially if predisposed)

The guidelines are the recommendations that the target population would receive through messages, complemented by appropriate graphic. Based on the field testing of the messages and graphic, the recommendations for the guidelines were selected on the basis of two criteria: - the objectives of the guidelines and their potential for implementation by the target population. In order for the population to remember the messages and in order to facilitate their dissemination through the media, the number of messages tested was limited to eight.

2.7. Validation and Testing:

The guidelines were field-tested in all parishes of the country among different age groups and sexes to determine whether or not the messages and graphic were understood, relevant, acceptable and persuasive. While the guidelines maybe theoretically correct, if they are not understood, remembered and applied by the people for whom they are intended, they will not fulfill their purpose. The testing was conducted in three phases: - the message only; the graphic only and both message and graphic together. In the testing stage, the support and input from persons trained in the fields of anthropology and sociology were obtained.

2.8. Corrections and Adjustments:

Based on the test results, corrections and adjustments were made to the messages and graphic. Following the corrections and adjustments, an additional technical review was conducted by the multi-sectoral committee (MSC) at a second two-day workshop to ensure that the adaptation of the message to popular language did not distort the technical language.

2.9. Implementation:

The guidelines were first approved by the Government of Grenada prior to the implementation so that it became the official FBDG and graphic. Following approval, the implementation process began, guided by the communication strategy developed by the MSC. The communication strategy included the development and production of educational materials (brochures, facilitators handbook, posters, a jingle, video), promotional materials and the official launch of the FBDG.

2.10. Evaluation:

The dietary guidelines would be periodically evaluated in terms of both the implementation process and their impact on the lifestyle of the target population. A methodology and instruments will be designed that will allow for the systematic, objective and timely evaluation of the guidelines every five years.

		liquids and water intake	<p>preference for sugary snacks, cereals and desserts</p> <p>Change in lifestyle busier than before) no time for cooking or exercise, increased use of technology</p> <p>Perceived cost of fruits and vegetables Actual cost of fruits and vegetables</p> <p>Disinterest in planting/ starting family gardens</p> <p>Disinterest in cooking meals at home</p> <p>Lack of sleep, relaxation leading to increased weight gain Poor stress management</p> <p>Lack of screening (fear of doctors, or knowing if one is affected) (especially men)</p> <p>Rum culture (over consumption is norm)</p>	<p>consequences /ills of overconsumption of alcohol (getting survivors to share their experiences with others and graphic images of condition)</p> <ul style="list-style-type: none"> - Remain within recommended limits for men and women - 5 ounces of wine, 12 ounces beer and 1 ½ ounces rum/vodka/whiskey <p>Consume the recommended meals per day (3 main meals and 3 snacks)</p>
--	--	--------------------------	---	---

Chapter 3: Nutrition Situation Analysis

Health and Nutrition Problem	Critical Nutrient	Critical food	Practices / Habits / Beliefs Related to the Health & Nutrition Problem	Technical Recommendations
Diabetes	Excess Carbohydrate Excess Protein Excess Saturated Fats, Trans fat Excess cholesterol Insufficient Water Insufficient fiber	Excess Processed and Ultra Processed foods (preserved meats, fish, fruits, vegetables, Sweet and fatty snacks hidden sugar in dressings and sauces (ketchup B.B.Q., salad dressings) refined carbohydrates Excess sugar added during cooking and serving Insufficient fruits and vegetables, grains and legumes Excess Alcohol sugary fruit drinks and carbonated drinks Insufficient	Rum culture (over consumption is norm) Inactive/ sedentary lifestyle Desire for a strong, sweet taste in foods/ meals and drinks (soups, juices, stewed vegetables) Desire to have sweet preserved fruits (stewed fruit, jams, jellies) in place of fresh fruit. Habit of consuming sweetened juices at every meal. Lack of understanding of uncontrolled how eating habits affect one's health Consuming food too quickly; eating in front of tv, computers etc. Increased availability and	Increase planned physical activity (exercise) 30 – 40 minutes daily Make specific effort in diabetes – seek professional counselling Get involved in home family gardening (or container gardening) to reduce food bill. Education on reality of consequences /ills of hypertension (getting survivors to share their experiences with others and graphic images of condition) Consume 6-8 cups of water or more (graphics to show) of water each day. Use raw fruits and vegetables and/or bake and steam as method of preparations most days of the week Remain with recommendations for 1 tsp of added salt daily and use more local herbs and spices to flavor foods Use more fresh local meats, fish and poultry in meals rather than cured meats. Use at least five servings of fruits and vegetables combined/ Start with one at each meal if possible, Use them even as snacks. (use graphic to show 1 serving) Get enough sleep, plan and manage short term goal, professional counselling to manage stress Increase medical screening availability and stress importance of attending screening sessions (especially if predisposed) Consume meals away from television and pay attention to what you consume Education on reality of

3.1. Country Profile:

Grenada is located in the Eastern Caribbean and is the southern most of the Windward Islands just north of Trinidad and Tobago at latitude 12° N and 61° W. The State of Grenada is comprised of Grenada, the main island and two smaller islands, Carriacou and Petite Martinique. The State of Grenada has an area of 133 square miles (344 km²), with an estimated population of 109, 374 as of 2014 with 55.7% males and 47.8% females. The life expectancy from birth is 74.1 years with females having a longer life expectancy (73.2 years) than males (67.7 years) (Grenada Central Statistical Unit, 2014).

In 2008 a poverty assessment was conducted which revealed that Grenada had the highest incidence of extreme poverty in the Eastern Caribbean at 37.7%, of which 35.3 % of persons were able to meet food needs but no other essential needs for survival and 2.4% were deemed indigent (Central Statistical Office).

In 2015, the Gross Development Product was 4.6% and the per capita income was US \$9,156. The main economic drivers were agriculture and tourism, with tourism being the source of foreign exchange. Grenada is classified as ‘middle income’ country by the Eastern Caribbean Central Bank.

Literacy level is 98% for population with primary and secondary education mandatory and free. In the school year 2014-2015 enrollment levels were 11,865 for primary and 9,082 for secondary students. In addition, the community college provides associate degrees at a minimal cost to all students accepted.

3.2. Access to Nutrition Services

Nutrition services to the general population is provided via: -

- General Hospital: Resident Nutritionist

FORMULATION OF FBDG TECHNICAL RECOMMENDATIONS

Health and Nutrition Problem	Critical Nutrient	Critical food	Practices / Habits / Beliefs Related to the Health & Nutrition Problem	Technical Recommendations
Overweight/ Obesity	Excess Carbohydrate Excess Protein Excess Saturated Fats, Trans fat Excess cholesterol Insufficient Water Insufficient fiber	Excess Processed and Ultra Processed foods (preserved meats, fish, fruits, vegetables, Sweet and fatty snacks dressings and sauces (ketchup B.B.Q., salad dressings)	Inactive/ sedentary lifestyle “Children will grow/burn it out” “It’s in my genes”/ “That’s my nature” Desire for a strong, sweet taste in foods/ meals and drinks (soups, juices, stewed vegetables) Desire to have sweet preserved fruits (stewed fruit, jams, jellies) in place of fresh fruit. Increased availability of fried and barbecued foods	Increase planned physical activity (exercise) 30 – 40 minutes daily Make specific effort in managing weight – seek professional counselling Get involved in home family gardening (or container gardening) to reduce food bill. Education on reality of consequences /ills of hypertension (getting survivors to share their experiences with others and graphic images of condition) Consume 6-8 cups of water or more (graphics to show) of water each day. Use raw fruits and vegetables and/or bake and steam as method of preparations most days of the week Remain with recommendations for 1 tsp of added salt daily and use more local herbs and spices to flavor foods Consume meals around the same time every day. Use more fresh local meats, fish and poultry in meals rather than cured meats. Use at least five servings of fruits and vegetables combined/ Start with one at each meal if possible, use them even as snacks, (use graphic to show 1 serving) Get sufficient sleep, plan and manage short term goal, professional counselling to manage stress Increase medical screening availability and stress importance of attending screening sessions (especially if predisposed) Consume meals away from television and pay attention to what you consume
		Excess sugar added during cooking and serving Insufficient fruits and vegetables, grains and legumes Excess Alcohol Excess sugary fruit drinks and carbonated drinks Insufficient liquids and water intake	Preference for fried foods(bakes, chicken, etc.) Habit of consuming sweetened juices at every meal. Skipping meals	

Source: GFNC

Both under-nutrition and overweight/obesity constitute problems within this age group. Data collected between mid-2015 and 2019 show fluctuations in overweight and obesity but a drastic increase between 2016 and 2017 (GFNC, 2019). The 2019 Day Care Survey which assessed 958 children 6 months to 3 years old showed overweight /obesity remained about the same while underweight dropped by 55.5% from 2015 (Table 1). Assessment for 2018 was not completed due to School Health Assessment.

3.3.1.2. Pre-school

Table 2: Nutritional status of children attending Pre-school 2011 to 2018

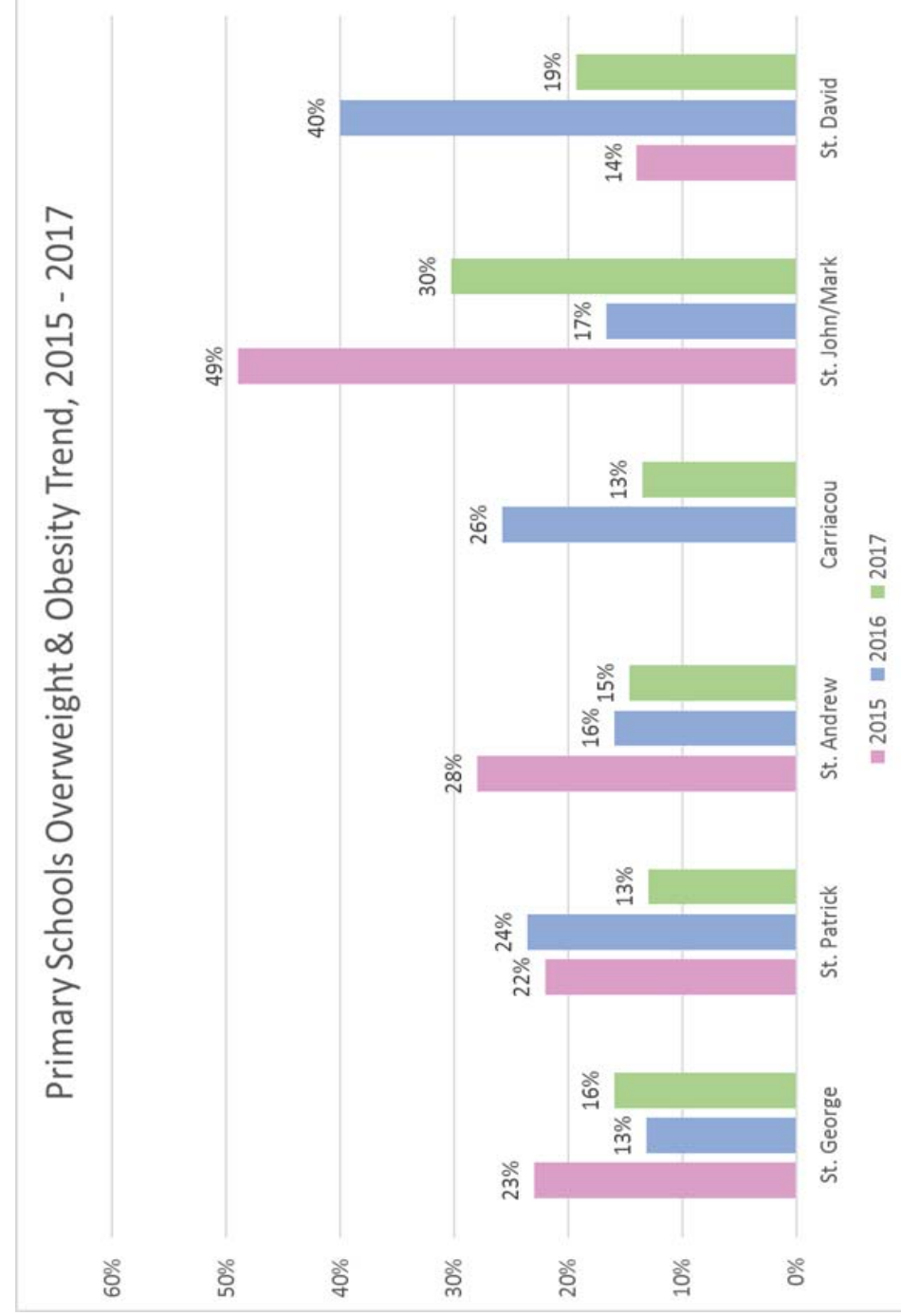
Year	Age Group	Indicator Used	No. of children assessed	No. overweight	% of overweight	No wasted	% Wasted	% Stunted
2011	3 – 5 years	Wt./ht. Z score	2441	49	2.0	182	7.5	
2014	3 - 5 years	BMI-for-age	2483	98	3.9	61	2.5	1.8%
2018	3 - 5 years	BMI-for-age	2956	144	4.9	67	2.3	1.6%

Source: GFNC

Pre-school surveys conducted quadrennially by GFNC shows drastic increase in overweight and obesity from 2011 to 2018 and a 63% decrease in children that were assessed as wasted. This indicates that programs geared toward reducing underweight among this age group made an impact on their nutritional status. However, there was some level of stunting amongst the 3-5 year old 1.6% (47) in 2014 and 1.8% (44) in 2018.

3.3.1.3. School- Aged Children

Figure 3: Comparison of BMI among Primary and Secondary School Students 2015 and 2017



WORK GROUP 2 DISCUSSION GUIDE

FORMULATION OF TECHNICAL RECOMMENDATIONS OF FOOD BASED DIETARY GUIDELINES

Elements to identify the technical recommendations of the FBDG:

Health and Nutrition Problem: In this column write the health and nutrition problems identified for the target population. These problems are the result of the document that describes the risk factors related to the diet and lifestyles of the population. Analyzing epidemiological factors from the point of view of morbidity and mortality and nutritional status.

Critical Nutrient: In this column, list all the nutrients directly or indirectly related to the health and nutrition problem, indicating whether the problem is due to deficiency or excess or interference with its absorption. Protective nutrients must also be identified.

Critical Food: This column includes all foods related to critical nutrients.

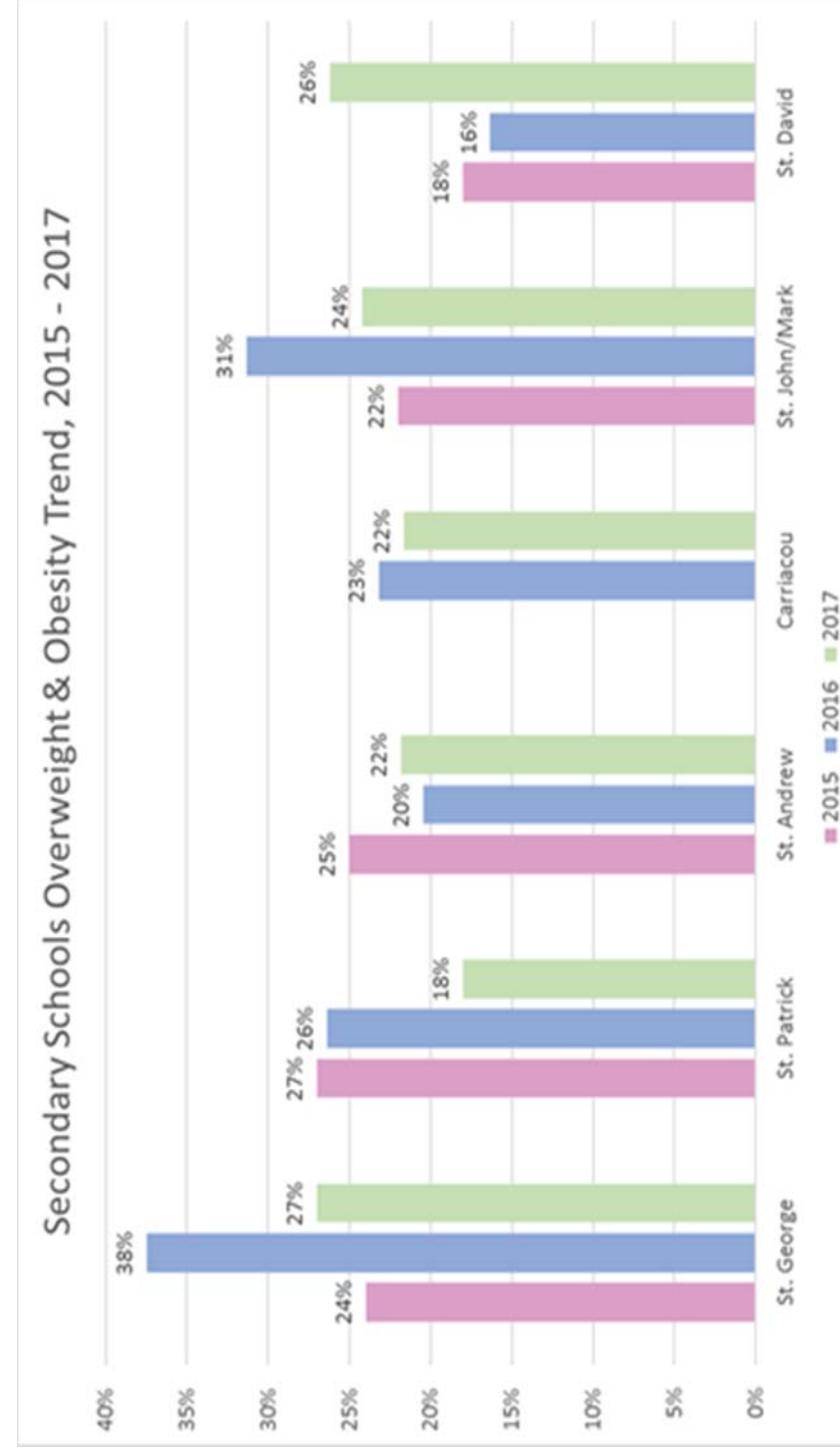
Food Consumption (Practices / Habits / Beliefs Related to the Health / Nutrition Problem): This column describes those food practices that affect the problem, both positive and negative. It also describes what is related to the production, availability and access to these foods. This column includes information on food consumption and food culture. The FBDG evaluation report includes relevant information to include in this column.

Technical Recommendations: After completing all the columns the group will be in a position to make technical recommendations that contribute to the solution of the problem identified, based on the analysis of the problem in terms of nutrients, food and practices. Include as many recommendations as needed in order to solve the problem.

Annex1

Revision of the 2006 FBDG: Task Force Representatives

- Food and Agriculture Organization of the United Nations (International Consultant)
- Grenada Food and Nutrition Council
- Ministry of Education
- Ministry of Agriculture
- Grenada Media Association
- Food and Agriculture Organization of the United Nations (local Consultant)
- Inter-Agency Group of Development Organizations (IAGDO)



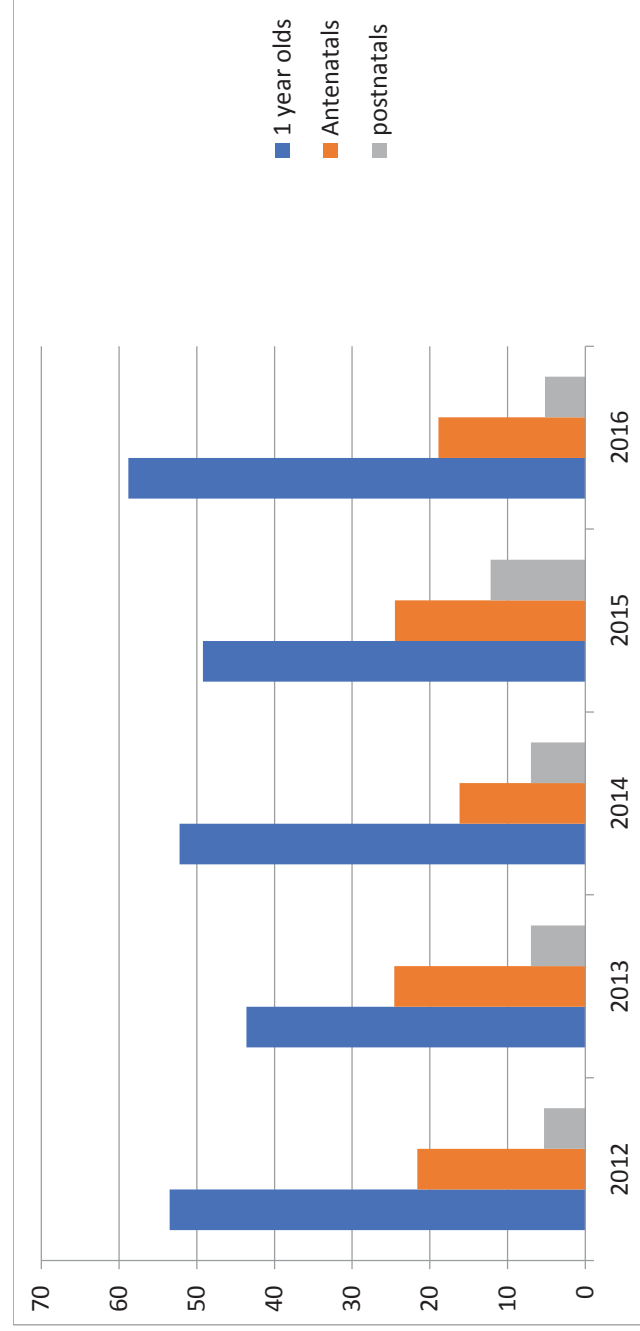
Source: Ministry of Health

In 2017, the national School Health Assessment conducted by the MOH, found that of the children assessed in primary and secondary schools, an average of 7% and 8% respectively were underweight and 23% and 26% respectively were either overweight or obese. Further analysis of the data showed that the rates of obesity was higher among secondary school Form 1 students when compared to primary school Grade 1 students, (MOH, 2017).

3.3.1.4. Iron Deficiency

Iron deficiency is the most common micronutrient deficiency and the leading cause of anaemia in more than one half of children in developing countries. Assessments of one-year old hemoglobin (Hb) levels revealed 53.5% of one year old screened were anaemic in 2012; 43.6% in 2013, 52.3% in 2014 and 49.2% in 2015 (Figure 4). This indicates consistently, nearly half of one-year old are anaemic, (Hb less than 11g/dl). Similarly, antenatal and postnatal women have a consistent problem of anaemia, as do school -aged children. Between 2015 and 2017 the School Health Assessment of primary and secondary school children shows an increase anaemia amongst primary school students in every parish, whilst in secondary school the trend is reversed with the exception of St. Patrick.

Figure 4: Anemia among 1year old, Antenatal and Postnatal women



Source: Ministry of Health, Grenada

ANNEXES

Figure 8: Final graphic

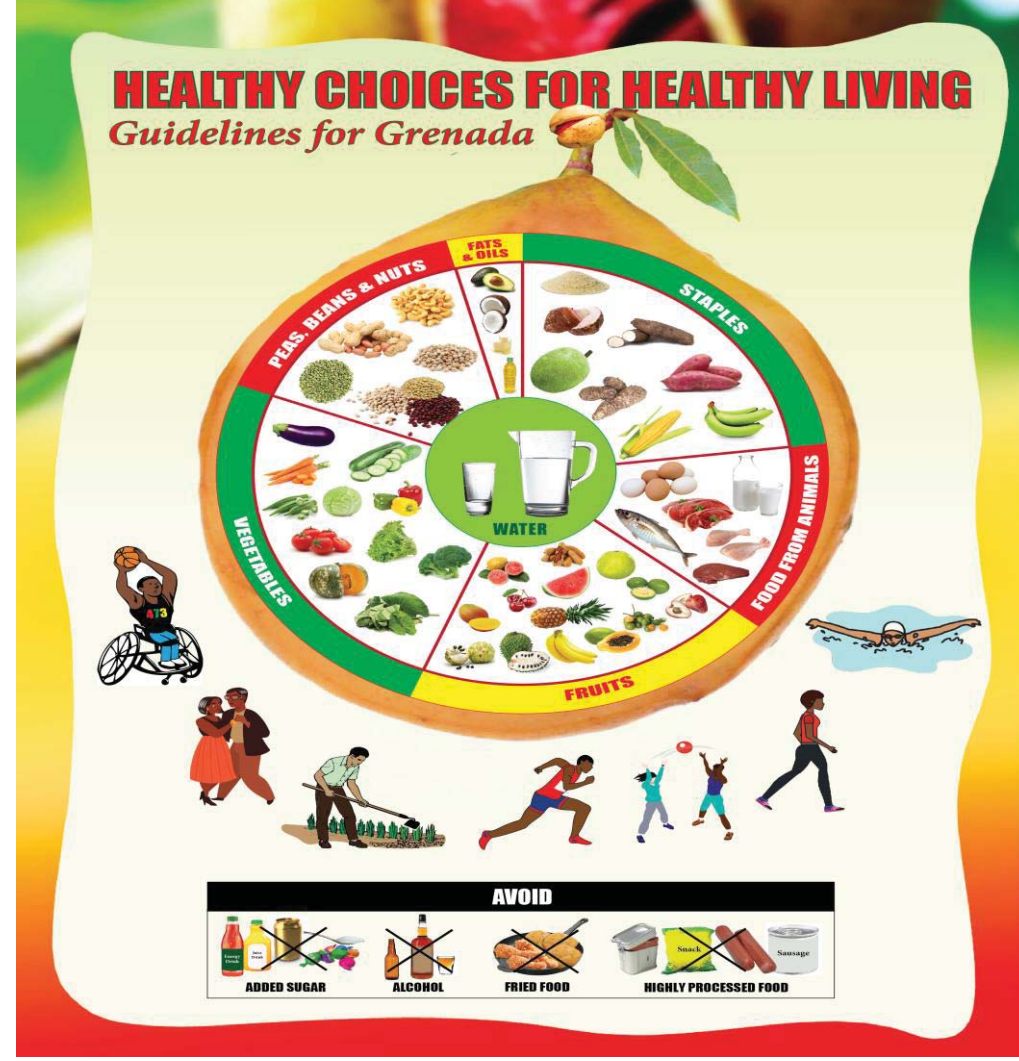
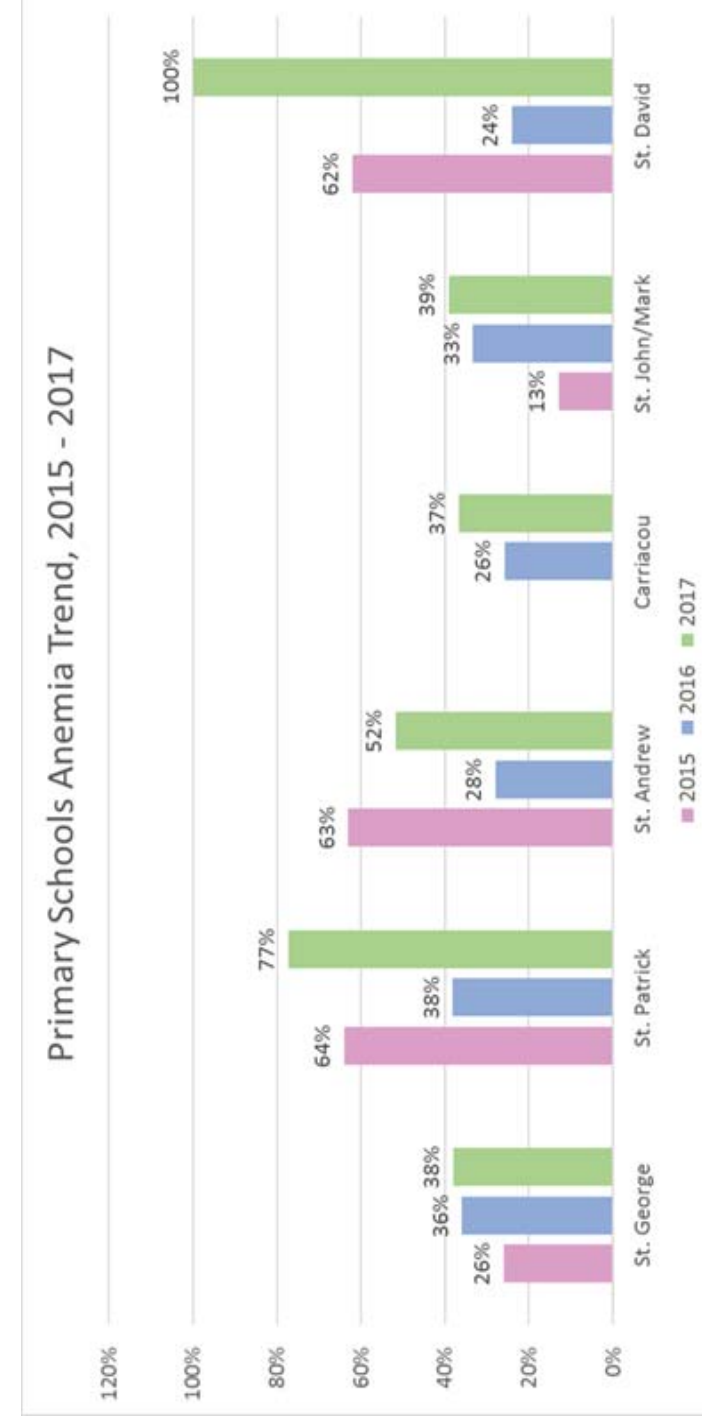
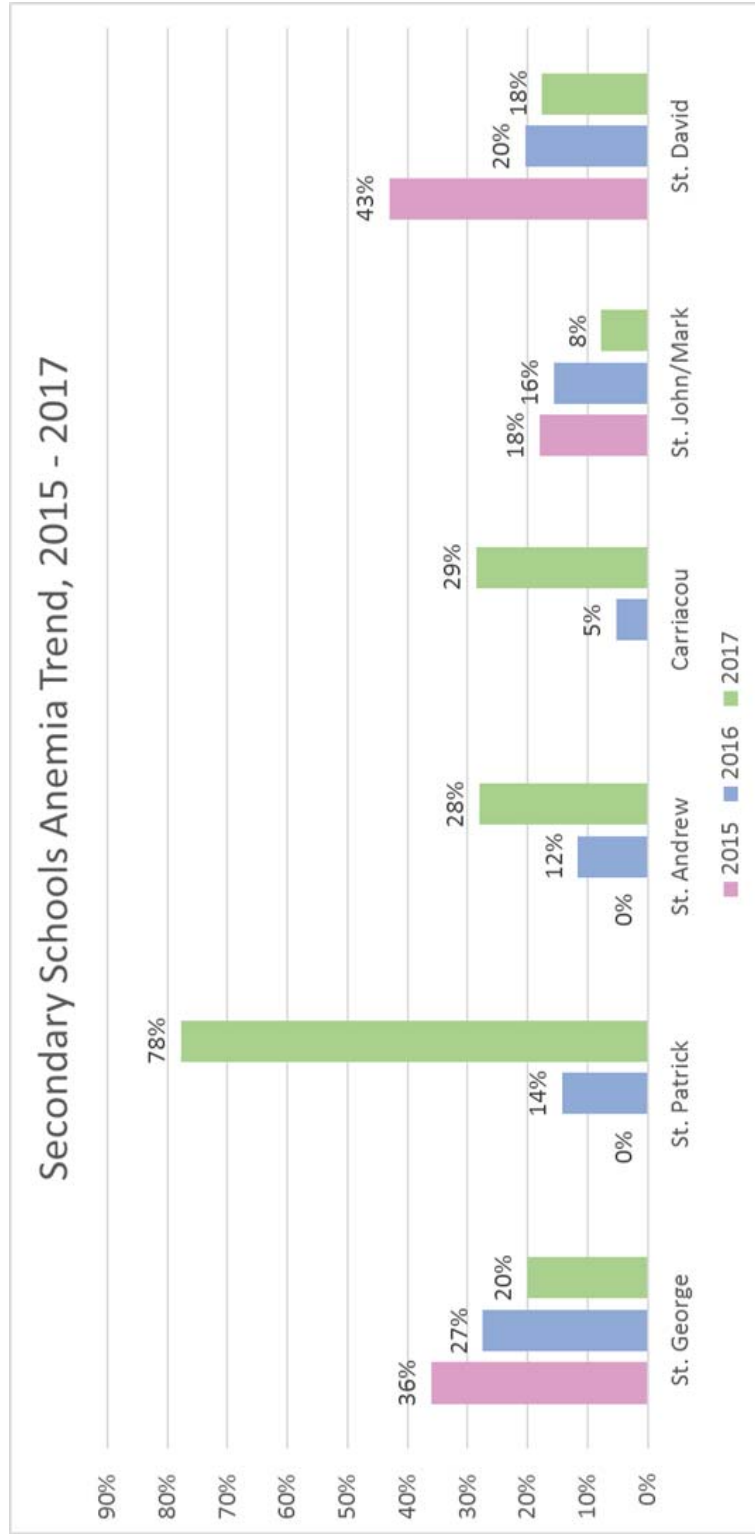


Figure 5: Anemia among primary and secondary school children (Grade 1 and Form 1)



Source: Ministry of Health, Grenada



Source: Ministry of Health, Grenada

7.2. Final Messages

Healthy Choices For Healthy Living

Guidelines for Grenadians

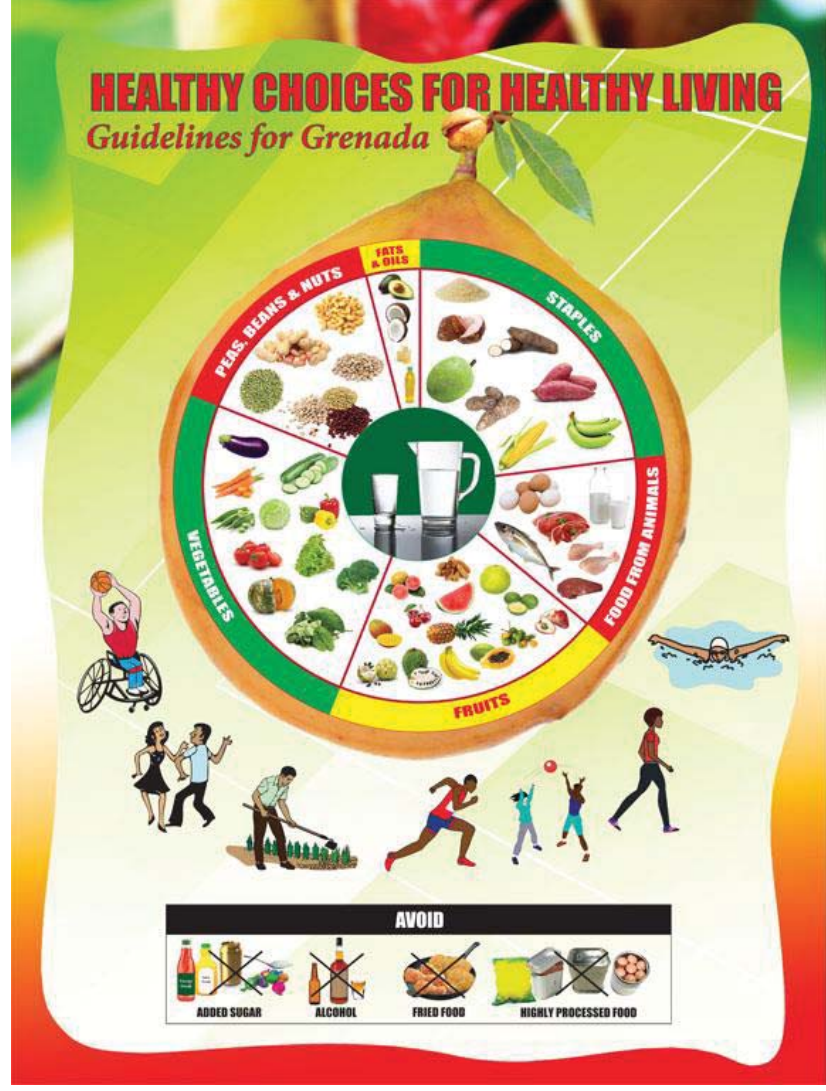
Choose Healthy Foods:

1. Let's eat healthy. Enjoy a variety of natural and safe foods every day.
2. Eat fresh vegetables and fruits every day. Grow what you eat and eat what you grow.
3. Flavour foods with local fresh seasoning and spices, it's the healthier choice.
4. Drink more water every day, it helps your body function better.
5. Avoid highly processed foods, snacks and drinks; they are high in fat, salt and sugar.

Choose Healthy Lifestyles

6. Be active! Get moving every day; it makes you look and feel good.
7. Create healthier ways to prepare our traditional dishes.
8. Make time to prepare, share and enjoy healthy family meals.

Figure 7: Second field test graphic



The second validation of the messages and graphic, after the second multi-sectoral committee meeting, was conducted amongst all age groups in the seven parishes. The messages were divided in two sets of four messages (Messages 1-4 and Messages 5-8) and the graphic with instruments were tested one each age group. A total of eight focus group discussions were conducted. **Reference Annex No. 4.**

3.3.1.5. Low Birth Weight (LBW)

Table 3: No. of LBW Babies Delivered at the General Hospital 2014-2017

Year	No. of Live births	LBW	%
2014	1750	174	9.9
2015	1681	126	7.5
2016	1577	118	7.5
2017	1396	124	8.9

Source: Ministry of Health

During the period 2014 to 2017 the number of low birth babies decreased by 1% (9.9 to 8.9% of live births). The prevalence of LBW in a population is an indication of a mothers' health and nutrition status.

3.3.1.6. Adults and Elderly

Table 4: New Diagnosis of Hypertension and Diabetes Screened in Community Clinics 2012-2018

YEAR	2012	2013	2014	2015	2016	2017	2018	TOTAL
Hypertension	406	356	259	752	443	688	402	3306
Diabetes	230	158	205	235	205	228	264	1625

Source: Ministry of Health

A comprehensive anthropometric assessment of adults and elderly in the general population has not been carried out. Small scale anthropometric assessments conducted by the GFNC at health fairs, communities and at business places found an increase in obesity in adults. The PAHO/WHO STEPS Survey of 2010 to 2011 found that almost 70% women and 48% men are either overweight or

Chapter 7: FBDG Messages and Graphic

obese and women are almost 3 times more likely than men to be obese. Only a third (33%) of the women have normal weight compared to 50% men. In 2017, an anthropometric assessment of 103 bus drivers and conductors was conducted at the St. George's Bus terminal. Of the 86 men assessed, 30 (35%) were normal weight for height, 31 (36%) overweight and 21 (24%) obese while 4(5%) were underweight. Comparatively among the 17 women assessed 2 (12%) normal weight for height, 7 (7%) overweight; and 8 (47%) obese; there was no underweight. Screening of adults and elderly at community clinics between 2012 and 2016 found 2,216 new cases of hypertension and 1133 cases of diabetes (Table 4). This increasing trend in obesity is an underlying risk factor for chronic non-communicable disease, poor health and decreased lifespan, is reflected in the top ten of the leading causes of death in Grenada (Table 5)

3.3.2. Mortality and Morbidity:

Non-communicable diseases are the leading cause of death in Grenada. The leading cause of morbidity and mortality being neoplasms, endocrine and metabolic diseases and followed by cerebrovascular diseases (Table 5). The highest rate of cancer occurring in persons 65 years and older. (Figure 6). Grenada Hospital Services in its costing for 2012-2013, projected a substantial increase in admissions for chronic non-communicable diseases. It projected the number of admission for cancer would increase from 705 in 2012 to 988 in 2025, 982 to 1678 for diabetes, 1270 and 2100 for hypertension and 31 to 41 for cerebrovascular disease over the same period. The WHO/PAHO STEPS Survey of 2010 to 2011 found 61.3% of the respondents had 1 or 2 risk factors and 35% and 3-5 risk factors for chronic non-communicable diseases.

In the second two-day workshop conducted with the MSC. The objectives were to:

1. Review the results of the field tests of messages and graphic.
2. Select feasible recommendations to be implemented by the population and prepare the first version of the messages of the food guidelines
3. Review and improve the graphic
4. Define the contents of basic educational materials to launch the FBDGs.

The working groups of the committee reviewed the results of the field test and made changes based on the suggestions from the focus group. The following messages and graphic are the output of the review by the working groups of the MSC: -

7.1. Revised Messages

Choose Healthy Foods:

1. Let's eat healthy, let's eat local. Enjoy a variety of natural and safe foods every day.
2. Eat fresh vegetables and fruits every day. Grow what you eat and eat what you grow.
3. Flavour foods with local fresh seasoning and spices, it's the healthier choice.
4. Drink more water every day, it helps your body function better.
5. Avoid highly processed foods, snacks and drinks; they are high in fat, salt and sugar.

Choose Healthy Lifestyles

6. Be active! Get moving every day; it makes you look and feel good.
7. Create healthier ways to prepare our traditional dishes
8. Make time to share and enjoy healthy family meals

Data collected were transcribed and analyzed by a professional group, *BLAZE Research Associates*.

In July 2019, under the guidance of Ms. Molina the International FBDG Consultant and the Multi-sectoral Committee, that now included a Graphic Designer, reconvened to review the contribution of the respondents from the focus groups. A presentation on the analysis was made by Dr. Wendy Crawford-Daniel of *Blaze Research Associates Grenada*. Her analysis found that prior knowledge of the recommendations was clear. Additionally, based on the interpretations of the responders, it was found that they clearly understood the recommendations of which they had no prior knowledge.

The recommendations that directly relate to consumption and consumption choices seem to pose the most challenges. Socio-economic issues impeded the ability of responders to follow these recommendations. Responders referenced the difficulty of making healthier choices were greatly affected by constraints of time, cultural changes and access. Changes in family dynamics, labor force changes, cultural shifts including changes in the agrarian culture and financial ability to access healthy foods are the most limiting factors.

The recommendations with the least socio-economic challenges such as: “drink water everyday instead of sugary drinks,” and “be physically active every day” speaks to behavioral challenges. Behavior change requires consistency in messaging using various dissemination mediums and influential strategies.

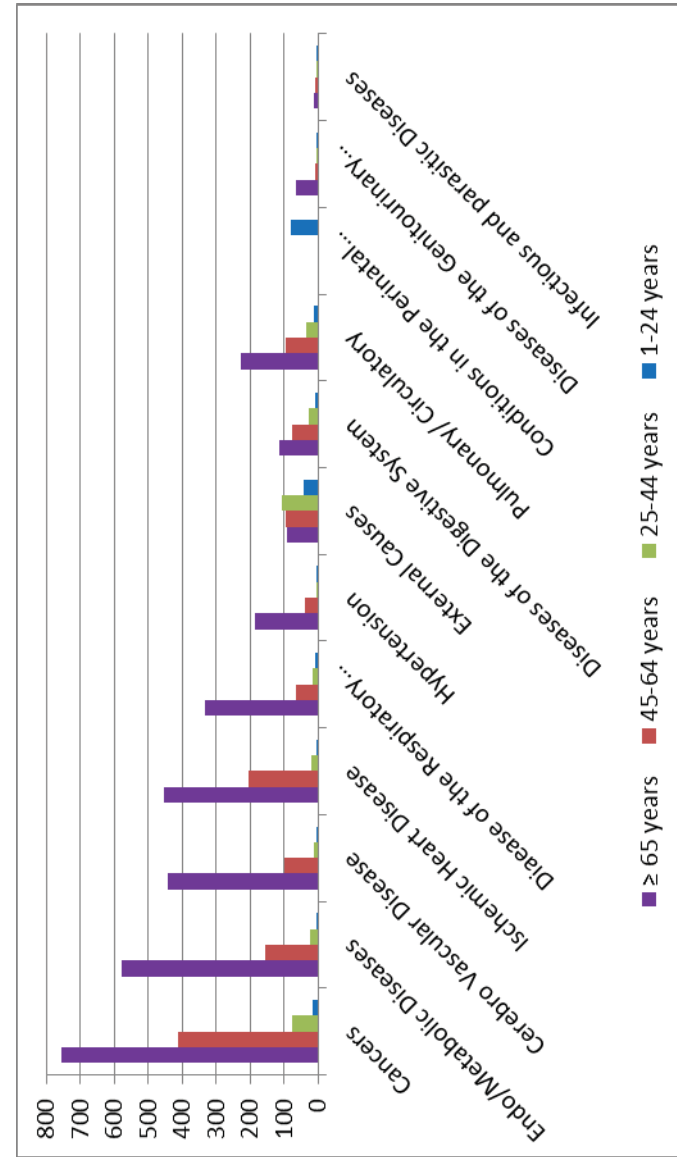
In her analysis of the visual method used, the messaging was clearly identified as one of the best features. This method facilitates understanding of messaging content and clear interpretation of intent across the demographical spectrum. However, adjustments should be made in reference to the responders’ suggestions. Main points for consideration included: - improving visibility; including/highlighting more local foods; including images depicting people of different ages. The message is targeting all age groups and should therefore reflect that diversity”⁷. Working with the feedback from the analysis, working groups of the MSC reviewed the messages and graphic. Following broad discussions, the messages were rewritten, and changes were made to the graphic.

Table 5: Top 10 Causes of Death in Grenada by year

Top 10 Causes Of Death In Grenada	2012	2013	2014	2015	2016	2017	2018
Neoplasms (Cancer)	187	156	172	171	200	189	178
Ischaemic Heart Diseases	76	84	99	66	132	96	125
Endocrine & Metabolic Diseases	109	85	115	115	118	102	116
Diseases of the Respiratory System	65	59	80	44	60	65	77
Cerebrovascular Diseases	97	85	86	68	55	89	74
External causes	43	48	36	59	52	55	59
Diseases of the pulmonary Circulation & other forms of Heart Diseases	36	32	80	48	47	40	87
Hypertensive Disease	55	56	51	-	38	42	42
Diseases of the Digestive System	43	35	37	24	31	42	42
Certain conditions originating from perinatal period	-	30	28	19	21	--	--
Diseases of the Genitourinary Systems	--	--	--	--	--	28	26
Infectious and parasitic Diseases	--	--	--	24	--	--	--
Diseases of the Nervous System	18	--	--	--	--	--	--

Source: Ministry of Health

Figure 6: Causes of Death in Grenada from 2012 to 2018 by Age Group



3.4. Food and Nutrition Security:

- **Food Availability:** Domestic agriculture production in Grenada comprised mainly of tree crops (cocoa, nutmeg and other spices) fruit, vegetables, root crops and livestock (poultry, cattle, pig and small ruminants). The production is carried out mainly by small farmers with minimal resources. Food production in Grenada has seen a decline in recent years due to the effects of severe drought, aging farmers, decrease in backyard farming by individual household. The Grenada Agriculture Census of 2012 found that the total numbers of farms decreased by 21% from 11,781 in 1995 to 9,345 in 2012. There was also

24

Chapter 6: Field Test

In February and March of 2017, twenty (20) focus groups were conducted to assess the understanding, acceptability and feasibility of the new messages. The graphic design remained a nutmeg, unique to Grenada, with some changes that would speak to the current health situation. Two versions of the graphic were prepared.

The written messages and graphic were tested through Focus Groups in each of the seven parishes. The sessions were 1 – 1/2 hours in duration and were facilitated by a moderator and a recorder.

Four messages and the two graphics were tested per focus group, of approximately 8 to 12 persons. Refer to *Annex No.3* for the Field Test Instruments.

Table 20: Focus groups

PARISH	GROUPS	NUMBER OF FOCUS GROUPS
St. George	School children, Adolescents, Adults and Elderly	4
St. David	School children and Adolescents	2
St. Andrew	School children, Adolescents, Adults and Elderly	4
St. Patrick	School children and Adolescents	2
St. John	Adult and Elderly	2
St. Mark	School children and Adolescents	2
Carriacou	School children, Adolescents, Adults and Elderly	4

A total of 200 respondents of varying ages and sex were interviewed. There were students, professionals, non-professionals, and retirees in the private and public sectors. Respondents were from the following age groups: -

- Child: (Primary School) 10 - 12 years
- Adolescent: (Secondary School) 14 - 15 years
- Adolescent: (College) 16 – 19 years
- Adults: (Professionals and Non-Professionals) 20 – 59 years
- Elderly: 60+ years

5.3. Suggested Order of Messages

The following order was proposed: -

1. Enjoy everyday a variety of natural, safe local foods as shown in the diagram
2. Eat fresh vegetables and fruits everyday. Start by growing them at home.
3. Avoid highly processed foods, drinks and snacks; they are high in fat, salt and sugar.
4. Flavour your foods with local fresh herbs and spices instead of salty seasonings and salt.
5. Drink water everyday instead of sugary drinks.
6. Make mealtime an occasion to share and enjoy with family and friends.
7. Discover easier and healthier ways to prepare our tasty traditional cuisine/dishes
8. Be physically active every day! It makes you feel good, helps manage weight and stress

a decrease in the total area of farms from 31,177 acres in 1995 to 23,599 acres in 2012. The most affected areas were St. Andrew and St. Mark. In addition, the average age of male farmers increased from 48 years to 51 between the same period while female farmers decrease from 54 to 53 years. In 2016, there was an 18.8% decline in the volume of food crops due to severe drought (2017 Budget Statement). A survey conducted by MOA and FAO in 2011 found that 75% of the food crops (vegetables, root crops and tubers) were sold, 16% home use, 5% spoilage and 1% praedial larceny. Grenada has become dependent on food imports to meet national food needs. The value of food imports has increased over the years, but since 2015 there has been a drop from EC\$ 161 million to EC\$145 million in 2018 (International Trade Center calculations 2018). The main food categories are cereals, sugar and confectionary, oil seed etc., cereal preparations, fats and oils and miscellaneous edible preparations. Climate change, an increasing challenge in the availability of and accessibility to food, will increase the risk of natural hazards such as the intensity of droughts, hurricanes and floods both locally and internationally. Shocks from the international hazards will have a negative effect on the stability of the food supply. The Government of Grenada has implemented programs such as the Grenada Agriculture Feeder Road Project Phase- II which aims to build or repair roads and paths leading to lands intended for agricultural production, in order to facilitate producer's access to the market and Climate Smart Agriculture and Rural Enterprise Project which aims to promote rural business development and climate-smart agricultural practices in rural areas of Grenada. In so doing, decrease youth unemployment and the high exposure of agricultural production to climate change and climate variability and increase production and income levels in rural communities

- **Food Access:** Grenadians have access to food through purchases at supermarkets, small village shops, farmer's market in the parishes on specific days in the week and own production. Prices can vary based on location, availability and season. The 2008 Poverty Assessment survey found that some segments of the population did not have access to sufficient food. These vulnerable groups include low income households, children and adolescents with low education, unemployed youths, adults working poor and the elderly which accounts for 26% of the population. Food prices another factor to food access has seen an increase in the last decade. In an effort to ensure persons have access to food, the government of Grenada has implemented programs such as the School Feeding Program

(SFP) and the Support for Education and Empowerment Development (SEED). The SFP provides one meal a day to children in primary and secondary schools and some pre-selected schools whereas the SEED program provides monthly monetary aid to children 3-18 years attending school with a 95% attendance record and vulnerable households whose members attend health checks and attend working groups. Additionally, the Grenada Food and Nutrition Council conducts a monthly nutrient cost of basic food items. The nutrient cost was developed as a tool with several applications including monitoring food prices, assisting in determining minimum wage and the costing of meals for a family of four. Using the food prices collected from 4 parishes (St. George, St. Andrew, St. Patrick and Carriacou), low cost balanced meals are developed. These meals are published weekly in the local newspaper for the public to use to create a menu and purchase lower cost foods items.

- Food Composition:** The increase in food importation and the types of food imported is reflected in the current diet of the population. There has been a decrease in the consumption of fruits vegetables, roots and tubers (ground provision) and legumes and an increase in the consumption of more highly processed imported foods high in fat and oil, sweeteners and sodium. A review of the foods imported shows that meat and other edible offal are the largest category of food by value mainly chicken parts of substandard quality. The typical meal of most Grenadians consists of animal protein, carbohydrates and minimal vegetables as revealed in the 2010-11 STEPS survey. This nutrition transition is also reflected in the calories consumed per capita exceeding the recommended population food guidelines of 2400 calories (State of Food Insecurity in the Caribbean FAO 2015). Anecdotal data suggest an increase in the numbers of food outlets preparing traditional foods and other fast food outlets preparing fried foods and refined carbohydrates served with sugar sweetened beverages indicating an increase in the number persons eating away from home.
- Food Consumption:** Several factors influence food choices including income, price as it relates to affordability and education and knowledge. Data on food consumption patterns are not available currently to provide a complete assessment. The Global Nutrition Report on Grenada’s consumption of food groups and components in 2016,

5.2. Message Comparison

The following Table 19 summarizes the 2005 messages and the revised messages which emerged along the various steps of revision.

Table 19: Comparison of 2005 FBDG Messages and Revised Messages 2017

2005 FBDG MESSAGES	MSC REVISED MESSAGES AUGUST 2017	MESSAGE FOLLOWING FAO METHODOLOGY AFTER NOVEMBER 2017 WORKSHOP
Eat a variety of foods as shown in the diagram	Eat a variety of foods as shown in diagram.	Enjoy everyday a variety of natural, safe local foods as shown in the diagram
Drink more water. It’s the healthier choice!	Drink more water.	Drink water everyday instead of sugary drinks.
Be more physically active. Get moving	Be more physically active.	Be physically active every day! It makes you feel good, helps manage weight and stress
Eat larger amounts of fruits and vegetables	Eat more local coloured vegetables and Fruits.	Eat fresh vegetables and fruits everyday. Start by growing them at home.
Eat less fatty, oily, greasy and barbequed foods	Eat less fatty, oily, fried and BBQ food	Avoid highly processed foods, drinks and snacks; they are high in fat, salt and sugar.
Use less salt, salty foods, salty seasonings and salty snacks	Use less salt, salty foods, salty seasonings and salty snacks.	Flavour your foods with local fresh herbs and spices instead of salty seasonings and salt.
Choose to have less sweet foods and drinks	Use less sweet foods and drinks	<i>(Included in messages marked in blue)</i>
Drink little or no alcohol	Drink little or no alcohol OR Avoid	<i>(Is going to be included in the graphic)</i>
		Make mealtime an occasion to share and enjoy with family and friends.
		Discover easier and healthier ways to prepare our tasty traditional cuisine/dishes

Food based on natural or minimally processed foods	Included in message for variety of foods and low is saturated fat, salt and sugar	
Biodiversity and sustainable food system	Included in message for variety of foods	
Importance of ways to feed ourselves	<ul style="list-style-type: none"> • Make mealtime an occasion to share and enjoy with family and friends. • Enjoy meals together as a family <p>Make family meals a time to share and enjoy</p>	<ul style="list-style-type: none"> • Build closer bonds with family and friends • To live longer • Be better role models for food habits and table manners • To share happy times <p>To encourage good eating habits</p>
Reevaluation of the national culinary identity	<ul style="list-style-type: none"> • Help youth to rediscover and cook our rich traditional cuisine/dishes • Discover new easier ways to prepare our tasty traditional cuisine/dishes • Discover easier and healthier ways to prepare our tasty traditional cuisine/dishes 	<ul style="list-style-type: none"> • To learn cooking skills • To share good time with others • To eat local • To use creativity in preparing traditional meals healthier • To keep tradition alive •

using the Theoretical Minimum Risk for Exposure level (TMRE)(the safe minimum or maximum daily intake of a food group or nutrient for a certain population ranging from 0% to 200%) shows that the population consumed below the mid-point for fruits, vegetables, legumes, nuts and seeds, whole grains, processed meats and red meat, exceeded the mid-point but not the 200% for saturated fats and salt and exceeded the 200% for sugar sweetened beverages. The change in the food supply from locally produced food to a heavy dependence on imported foods is mirrored in this report.

3.5. Conclusion

The increased incidences of non-communicable disease and death from those diseases have a direct correlation between healthy foods and healthy lifestyles. It is imperative to challenge our people to eat healthy, make healthy food choices, prepare healthy meals and make healthy lifestyle choices. In so doing, the burden of chronic non-communicable diseases can be decreased; thereby increasing the overall health and wellbeing of the population.

3.6. Prioritization of Grenada’s main health problems:

The leading causes of mortality in Grenada are Non-communicable Chronic Diseases specifically malignant neoplasms, Ischaemic Heart Diseases and Endocrine & Metabolic Diseases which are correlated with diet and lifestyle practices. The following are the main health problems in Grenada: - increasing trend of obesity; iron deficiency, diabetes; hypertension, cancer and heart disease.

Chapter 4: Nutritional Goals Standard Diet Calculation

The following were considerations in the determination of caloric and nutrient needs: -

- Age groups to be addressed for the population 2 years and older,
- Age group and rank (young child, child, Adolescent, adult and elderly),
- Daily recommended intake (DRI) of each group
- Nutritional goals for macronutrients as a percentage of total energy value (TEV)
- DRI for energy and macronutrients by age group and summarized DRI for energy and macronutrients by age group
- Calculated diet by age group and the number of servings, energy, carbohydrate, protein and fat for each food group
- Calculated the servings, energy, carbohydrate, protein and fat for each food group for 1000-2900 calories diets

4.1. Food groups³

The Caribbean six food groups, as defined by CFNI, are a way to choose a variety of foods to provide the body with nutrients required to maintain good health.

- **Staples:**
 - Starchy fruits, roots, tubers and their products: banana, plantain, breadfruit, yam, Irish potato, sweet potato, dasheen, cocoo, eddoes, cassava.
 - Cereals: Bread (from wholegrain or enriched flour), flour, cornmeal, cooked and ready-to-eat cereals, macaroni, spaghetti, rice.
 - **Nutrients:** Carbohydrates, Vitamins, Minerals and Fiber
- **Fruits:**
 - Mangoes, oranges, sugar-apple, guava, sapodilla, pawpaw
 - **Nutrients:** Carbohydrates, Vitamin C, Vitamin A, Fiber,
- **Vegetables:**
 - Dark green leafy, yellow and other non-starchy vegetables such as callaloo, watercress, lettuce, pumpkin, carrots, eggplant and cabbage.
 - **Nutrients:** Vitamin C, Vitamin A, B complex, minerals and Fiber,

<ul style="list-style-type: none"> • Physical activity • Maintain a healthy weight • Manage stress and get enough sleep 	<ul style="list-style-type: none"> • Be more physically active (Get moving) walk, swim, play or dance daily. • Be physically active every day! It makes you feel good, helps manage weight and stress. • Be more physically active. Get moving everyday makes you feel good, helps manage weight and stress. 	<ul style="list-style-type: none"> • Makes you feel good physically and mentally. • Helps you to manage your weight
<ul style="list-style-type: none"> • Use more fresh herbs/spices to season/ flavor foods 	<ul style="list-style-type: none"> • Use fresh herbs and spices to flavor your foods instead of salty seasonings and salt. • Flavour your foods with local fresh herbs and spices instead of salty seasonings and salt. 	<ul style="list-style-type: none"> • To enhance the natural flavour of foods • To live longer • To prevent high blood pressure and strokes
<ul style="list-style-type: none"> • Variety of foods • Eat more fresh local meat, fish and poultry in place of cured meats 	<ul style="list-style-type: none"> • Eat a variety of natural, safe local foods daily as shown in the diagram. • Enjoy a variety of natural, safe local foods everyday as shown in the diagram. • Enjoy everyday a variety of natural, safe local foods as shown in the diagram 	<ul style="list-style-type: none"> • To eat healthy • To get the most nutrients from all your foods • For the body to function more efficiently • Help protect the environment • Support local farmers and the economy
Drink more water	Drink more water instead of sugary drinks. Drink water everyday instead of sugary drinks.	<ul style="list-style-type: none"> • To have healthier skin • Healthy kidneys • Prevent constipation • Prevent obesity and other chronic diseases • To have healthier teeth
Drink little or no alcohol	(to be included at the end as foods to avoid or limit or include as a message?)	
Bake or steam as a method of preparation on most days	Part of educational materials	

Principles	Messages	Motivations
Healthy eating is a right	No message needed. Part of educational material	
Right to local food	Included in message for variety of foods	
Physical activity	Included in message for physical activity	

The technical recommendations were tabulated based on the number of times a recommendation was suggested; they were rated from 1 to 8 and amendments were made to ensure clarity. The technical recommendations were compared with the messages from 2006 and messages suggested by the multi-sectoral committee. Additionally, the messages were arranged in order based on the health situation and the needs of the population. The new messages and the comparison chart together with questions were sent to the members of the multi-sectoral committee for review and comments. Based on feedback from the Committee, the messages and graphic were revised.

5.1. Technical Recommendations for Messages:

The technical recommendations become messages for the population, explained in simple and practical language. Also included are the motivations to follow that message. The same was done with the principles defined for the FBDGS

Table 18: Technical Recommendations, Principles, Messages and Motivation

Technical Recommendations	Messages	Motivation
<ul style="list-style-type: none"> • Eat fresh vegetables and fruit every day. • Grow vegetables and seasonings at home 	<ul style="list-style-type: none"> • Eat fresh vegetables and fruits every day. Start by growing them at home. • Grow and use more fresh fruits, vegetables, herbs and spices. 	<ul style="list-style-type: none"> • To stay healthy; • To prevent illnesses • To get natural nutrients • To prevent constipation • A stronger immune system • To help maintain your weight
<ul style="list-style-type: none"> • Choose foods low in saturated fats, salt and sugar. • Eat less highly processed foods • Eat more fresh local meat, fish and poultry in place of cured meats 	<ul style="list-style-type: none"> • Avoid highly processed food (items or products); they are high in fat, salt and sugar. • Avoid highly processed foods, drinks and snacks; they are high in fat, salt and sugar. 	<ul style="list-style-type: none"> • To prevent overweight and obesity • To prevent heart disease and stroke • To live longer • To lose weight • To prevent diabetes

- **Peas, Beans and Nuts:**
 - Pigeon peas, split peas, black eye peas, red beans and other dried peas beans and nuts
 - **Nutrients:** Protein, Carbohydrates, Minerals and Fiber,
- **Food from Animals:**
 - Lean meat, lean poultry, fish, eggs, milk: beef, pork, mutton, wild meat, chicken, turkey
 - **Nutrients:** Protein, Fat soluble vitamins (A,D,E&K), Iron, B complex, calcium
- **Fats and Oils:**
 - Monounsaturated, polyunsaturated and saturated: olive, canola and peanut oil; walnut, sunflower seeds, corn and soybean oil; coconut oil; fatty meats, butter, cheese, hard margarine
 - **Nutrients:** Vitamin E, A;

Table 6: Macronutrient and Caloric Content of the Food Groups

FOOD GROUPS	Serving Size	Carbohydrate	Protein	Fat	Calories
Staples	½ cup	15	3	0-1	72 - 81
Fruits	½ cup	15	0	0	60
Vegetables	½ cup	5	2	0	28
Peas and Beans	½ cup	14	4	0	72
Nuts	1oz	5	7	14	174
Food from Animals Med. Fat	1 oz	0	7	5	73
Fats and Oils	1 tsp	0	0	5	45

4.2. Nutritional Goals and Standard Diet Calculations

The profile of the macronutrient distribution was determined based on the recommendations of the Institute of Medicine and FAO/WHO Human Energy Requirements. Using the Caribbean food groups as defined by CFNI and the exchange list for meal planning, the amount of food from each group was based on the macro-nutrient requirements per age group and the size and number of portions was determined appropriate consumption of quantity and variety.

4.2.1. Daily Recommended Intake (DRI) of Energy and Macronutrients by Age Groups

Table 7: Age Ranks

GROUP	AGE RANK (Years)
Young Child	2-6
Child	6-12
Adolescent	12-18
Adult	18-60
Elderly	Over 60

Table 8: Daily Recommended Intake (DRI) by Age⁴

GROUP	ENERGY DRI
Young Child	1000-1500
Child	1225-2000
Adolescent	1925-2900
Adult	1900-2350
Elderly	1725-1900

Note: The lower calorie levels may be used for females and the upper for males in all age groups.

Table 9: Nutritional Goals for Macronutrients % Total Energy Value (TEV)⁵

MACRONUTRIENT	NUTRITIONAL GOAL (% TEV)
Proteins	15-25%
Carbohydrates	50-55%
Fats	25-30%

Chapter 5: Technical Recommendations

To define the technical recommendations of the FBDG, a workshop was carried out, with the support of FAO international consultant, Ms. Veronika Molina, and the participation of the members of the multi-sectorial committee (MSC).

In line with FAO methodology, the objectives of the first workshop were to:

- Review the procedure followed to update the FBDGs of Grenada
- Review the methodology proposed by FAO to update the FBFG
- Present the health and nutrition situation in Grenada
- Discuss the implication of the health and nutrition situation and determine the strategies to address them
- Determine priority problems and national strategies to address them through the dietary guidelines

The expected results were recommendations to revise the messages and graphic to reflect the current health and nutrition situation in Grenada.

At the first workshop, conducted by the international FBDG consultant, the Multi-sectoral Committee working groups using a matrix, prioritized key problems and determined the issues that should be addressed. They looked at health and nutrition problems, critical nutrients, critical foods and consumption to determine the technical recommendations three work groups were then tasked with:

- Definition of FBDG Principles and Objectives – Group 1
- Definition of Technical Recommendations– Groups 2 and 3:

Technical recommendations were informed by the priority health and nutrition problems identified during the stage of population characterization. The analysis of the recommendations was carried out with GFNC working group and the International Technical Consultant. See annex 1 and 2.

Table 16: Diet Calculation by Age Group 5 Over 60 years

Exchange List	Portions	Energy 1725 -1900	Carbohydrates Grams	Proteins Grams	Fats Grams
Staples	8 - 8	621 - 630	120 - 120	24 - 24	5 - 6
Fruits	3 - 3	180 - 180	45 - 45	0 - 0	0 - 0
Vegetables	3 - 4	81 - 112	15 - 20	6 - 8	0 - 0
Legumes	1 - 2	72 - 144	14 - 28	4 - 8	0 - 0
Nut	1 - 1	174 - 174	5 - 5	7 - 7	14 - 14
Food from Animals /Meats	3 - 4	219 - 292	0 - 0	21 - 28	15 - 20
Food from Animals /Milk	2 ½ - 3	156 - 188	15 - 18	10 - 12	6.25 - 7.5
Fats	4 - 4	180 - 180	0 - 0	0 - 0	20 - 20
Sugar	1 - 1	20 - 20	5 - 5	0 - 0	0 - 0
TOTALS	26 ½ - 30				

Table 17: Summary of Recommended Diet by Age Group

GROUP OF FOODS	Number of Servings Recommended by Age Group				
	2 - 6 Years	6 -12 Years	12 - 18 Years	18 -60 Years	Over 60 Years
Staples	4½ - 7	6 - 8	8 - 12	8 - 10	8 - 8
Fruits	1½ - 2½	2 - 3	3 - 5	3 - 4	3 - 3
Vegetables	2 - 3	3 - 4	4 - 5	4 - 4	3 - 4
Legumes	1 - 1	1 - 2	2 - 3	2 - 2	1 - 2
Nuts	0 - 0.5	0 - 1	1 - 2	1 - 1	1 - 1
Food from Animals /Meats	1½ - 3	2 - 4	4 - 5	4 - 5	3 - 4
Food from Animals /Milk	4 - 2½	3 - 4	3 - 4	3 - 4	2 ½ - 3
Fats	3 - 3	4 - 4	4 - 5	4 - 4	4 - 4
Sugar	0 - 1	1 - 1	1 - 5	1 - 3	1 - 1

Table 10: DRI of Energy and Macronutrients by Age

NUTRIENT	% TEV	Group by Age					
		Group 1: 2-6yrs		Group 2: 6-12yrs		Group 3: 12-18yrs	
		Kcal	g	Kcal	g	Kcal	g
Protein	15-25%	182-272	46-68	202-368	51-92	344-505	86-126
Carbohydrates	55-60%	530- 758	133-190	608-1041	152-260	975-1454	244-363
Fats	25-30%	320-450	36-50	396-612	44-68	612-967	68-102

NUTRIENT	% TEV	Group by Age			
		Group 4:18-60yrs		Group 5: Over 60yrs	
		Kcal	g	Kcal	g
Protein	15-25%	344--368	86-92	312-344	75-83
Carbohydrates	55-60%	975-1041	244-260	907-975	225-252
Fats	25-30%	612	68	513-612	57-63

Table 11: Summary of DRI of Energy and Macronutrients by Age Group

Group of Age	Energy Kcal	Proteins (g)	Carbohydrates (g)	Fats (g)
2-6	1000-1500	46-68	133-190	36-50
6-12	1225-2000	51-92	152-260	44-68
12-18	1925-2900	86-126	245-363	68-102
18-60	1900-2350	86-104	245-296	68-79
60 and over	1725-1900	78-86	227-245	57-68

4.2.2. Diet Calculation by Age Group⁶

Table 12: Diet Calculation by Age Group 1, 2-6 Years

Exchange List	Portions	Energy 1000-1500	Carbohydrates Grams	Proteins Grams	Fats Grams
Staples	4 ½ - 7	351 - 549	67.5 - 105	13.5 - 21	3 - 5
Fruits	1 ½ - 2 ½	90 - 150	22.5 - 37.5	0 - 0	0 - 0
Vegetables	2 - 3	56 - 84	10 - 15	4 - 6	0 - 0
Legumes	1 - 1	36 - 72	7 - 14	2 - 4	0 - 0
Nuts	0 - 0.5	0 - 87	0 - 2.5	0 - 3.5	0 - 7
Food from Animals /Meats	1 ½ - 3	110 - 219	0	11 - 21	7.5 - 15
Food from Animals /Milk	4 - 2 ½	250 - 156	24 - 15	16 - 10	10 - 6
Fats	3 - 3	135 - 135	0	0	15 - 15
Sugar	0 - 1	0 - 20	0 - 5	0	0 - 0
TOTALS	17 ½ - 23 ½				

Table 13: Diet Calculation by Age Group 2, 6-12 Years

Exchange List	Portions	Energy 1225-2000	Carbohydrates Grams	Proteins Grams	Fats Grams
Staples	6 - 8	468 - 630	90 - 120	18 - 24	4 - 6
Fruits	2 - 3	120 - 180	30 - 45	0 - 0	0 - 0
Vegetables	3 - 4	84 - 112	15 - 20	6 - 8	0 - 0
Legumes	1 - 2	36 - 144	7 - 28	2 - 8	0 - 0
Nuts	0 - 1	0 - 174	0 - 5	0 - 7	0 - 14
Food from Animals /Meats	2 - 4	146 - 292	0 - 0	14 - 28	10 - 20
Food from Animals /Milk	3 - 4	187.5 - 250	18 - 24	12 - 16	7.5 - 10
Fats	4 - 4	180 - 180	0 - 0	0 - 0	20 - 20
Sugar	1 - 1	20 - 20	5 - 5	0 - 0	0 - 20
TOTALS	22 - 31				

Table 14: Diet Calculation by Age Group 3, 12-18 Years

Exchange List	Portions	Energy 1925-2900	Carbohydrates Grams	Proteins Grams	Fats Grams
Staples	8 - 12	630 - 954	120 - 150	24 - 30	6 - 7
Fruits	3 - 5	180 - 300	45 - 60	0 - 0	0 - 0
Vegetables	4 - 5	112 - 140	20 - 20	8 - 0	0 - 0
Legumes	2 - 3	144 - 216	28 - 28	8 - 0	0 - 0
Nuts	1 - 2	174 - 348	5 - 5	7 - 7	14 - 14
Food from Animals /Meats	4 - 5	292 - 365	0 - 0	28 - 35	20 - 25
Food from Animals /Milk	3 - 4	188 - 250	18 - 24	12 - 16	7.5 - 10
Fats	4 - 5	180 - 225	0 - 0	0	15 - 20
Sugar	1 - 5	20 - 100	5 - 15	0	0 - 0
TOTALS	30 - 46				

Table 15: Diet Calculation by Age Group 4, 18-60 years

Exchange List	Portions	Energy 1900-2350	Carbohydrates Grams	Proteins Grams	Fats Grams
Staples	8 - 10	630 - 783	120 - 150	24 - 30	6 - 7
Fruits	3 - 4	180 - 240	45 - 60	0 - 0	0 - 0
Vegetables	4 - 4	112 - 112	20 - 20	8 - 0	0 - 0
Legumes	2 - 2	144 - 144	28 - 28	8 - 0	0 - 0
Nuts	1 - 1	174 - 174	5 - 5	7 - 7	14 - 14
Food from Animals /Meats	4 - 5	292 - 365	0 - 0	28 - 35	20 - 25
Food from Animals /Milk	3 - 4	188 - 250	18 - 24	12 - 16	7.5 - 10
Fats	4 - 4	180 - 180	0 - 0	0	15 - 20
Sugar	1 - 3	20 - 60	5 - 15	0	0 - 0
TOTALS	30 - 37				