

# Report on Food Packages for Disaster Affected Population

Technical/Expert Committee, April, 2020.

## Background/Introduction

With request from the Ministry of Disaster Management and Relief (MoDMR), the Ministry of Health and Family Welfare have formed a 11 members Technical/Expert Committee on 12 March 2020 (Annex 1) . The committee is headed by the Director General, Bangladesh National Nutrition Council (BNNC) where the Line Director National Nutrition Services (NNS) will act as its member secretary. The committee will need to submit report/recommendations on its assignment within 30 working days to the Secretary, Health Services Division (with attention to Public Health and World Health Wing, MoHFW).

Terms of Reference (TOR) for the Technical/Expert Committee are:

1. To assess food requirements for different age and target groups in disaster affected areas;
2. To review the items and contents of the current dry food basket for relief.
3. To recommend nutrition balanced food basket for different age and target groups in consideration of the cost of the food, nutrition value, safety, availability, accessibility, transportation, distribution, storage facility and food preparation and current complexities of the Covid-19 situation etc.,

Current COVID-19 situation in Bangladesh is progressing very rapidly and seriously. Likely impact of COVID-19 infections, mortality and lockdown on economy, health, nutrition and food security of the population are going to far from normal that a developing economy like in Bangladesh may cope up easily. Nevertheless, the extent of problem is speculative and not yet fully understood.

Technical/Expert Committee has agreed to take on responsibilities to help overcome the crisis so that the current health crisis does not turn into an unescapable nutrition crisis in the future. This is the right time to take plan and actions. Accordingly, the committee has agreed to propose following deliverables:

1. Recommendations of food basket during the disaster including COVID-19- crisis
2. Key nutrition messages (for both general disaster and COVID-19) that must go along the food basket
3. A broad guidelines that will be followed coherently by all who implement the program at all different parts of the country
4. Will propose likely transition from crisis phase to rehabilitation phase including management of SAM/MAM cases

***TOR 1: To assess food requirements in different age and target groups in disaster affected areas***

Bangladesh is highly disaster-prone, and one of the countries in the world most at risk from the negative impacts of climate change, including increases in the incidence and intensity of extreme weather events ( e.g. cyclone, flood) and hazards such as soil salinization, rising sea levels and riverbank erosion. There is also the risk of earthquakes, posing a challenge, particularly for Bangladesh's growing unplanned cities. The poorest, most marginalized and vulnerable communities are hardest hit by disasters in Bangladesh as they are repeatedly exposed to natural hazards without the means to recover well. Disaster may involve destruction of assets and infrastructure and a breakdown of essential services, including health, nutrition services, and water supply, sanitation systems. During a disaster, household access to food is often challenged. Many people may be displaced, migrated and forced to live in overcrowded settlements like cyclone centre and embankment.

Malnutrition, including micronutrient deficiencies can easily be developed or worsen during disaster situations and further exacerbate the situation. Women and children are among the most vulnerable when a disaster hits and early nutrition actions are needed to meet their nutritional needs to avoid a deterioration of their nutrition situation. Experience has shown that infant and child morbidity and mortality rates often dramatically increase during/immediately after a disaster.

**General Food Ration Basket**

**1. Energy and nutrient calculation considered the following elements:**

- Current food package of the Ministry of Disaster Management and Relief (MoDMR) ( both contents, quantity).
- Compliance to International and National guidelines.
- The average (weighted) 2,100 Kcal/person/day as energy requirement of emergency affected population (as per international guidelines).
- The mean per capita energy requirement for a population has been calculated by taking the weighted-average requirements for each age-sex group
- The mean per capita energy requirement is not specific to any age or sex group and should therefore not be considered as the requirement of a particular individual.
- The estimate of 2,100 kcal/person/day was also designed to include the needs of pregnant and lactating women within the population.
- In line with FAO/WHO technical reports, Supplies minimum of 10% and a maximum of 15% of dietary energy from protein source.

- Supplies, at least 30% of dietary energy as fat for children 6-23 months, 20% for pregnant and lactating mother and 17% for other groups.
  - One RNI (Reference Nutrient Intake) (weighted average) of micronutrients.
  - Cover all age and target groups ( e.g. children, women and elderly, etc.) in the family.
2. Also considered the following issues and concerns regarding food selection:
    - Shelf-life of each food item.
    - Culturally acceptable, readily available.
    - Use of fortified foods (rice, oil, salt and biscuits) to prevent micronutrient problems of public health importance.
    - Cost of items/ food package.
  3. An Average five members per household.
  4. Minimum ration for seven days in one basket (for dry ration)
  5. First three (3) days for immediate response through a survival package, followed by general dry food ration package/basket.

***TOR 2 : To review the items and contents of the current dry food basket for relief.***

**Review and Assessment of Current food package**

General comments

- The current food package may provide overall 2,100 Kcal for a five member family for only 5.5 days (Table 1). Details are provided in the Annex.
- Currently packaged Minikat rice which lacks vitamins and minerals are not right kind of rice. Furthermore, percentage of starch and protein contents increased due to removal of upper part of big grain. The food items have not considered the specific needs of children, under-five children in particular (both items and nutrients contents).
- Noodles is unhealthy and unable to fulfill the requirements of nutrients.

Specific comments on nutrient contents

- The food items don't satisfy the recommended amount as suggested in the international guidelines<sup>i</sup> (ration for relief during disaster should supply 60-65% dietary energy as carbohydrate, minimum of 10% and a maximum of 15% of dietary energy as protein and at least 17% as fat). For example, the package provides total 1711kcal of which, 17.6% from oil and 7.4% are from protein. About 81% of energy, 60% of protein and 83% of fat requirements are also met ( Fig 1).

Table 1: Macro nutrient content/distribution of current food package (CFP)

Current Food package		
Commodity	1 day/person	
	gm/p/ day	Energy (Kcal)
Miniket Rice	286	984
Fortified vegetable oil	29	256
Lentil	29	92
Riceflakes (chira)	57	203
SALT, IODISED	29	0
Sugar	29	115
Noodles	14	60
<b>Total</b>	<b>473</b>	<b>1,711</b>

Fig 1: % of requirement (CHO, protein and fat) supplied by current ration

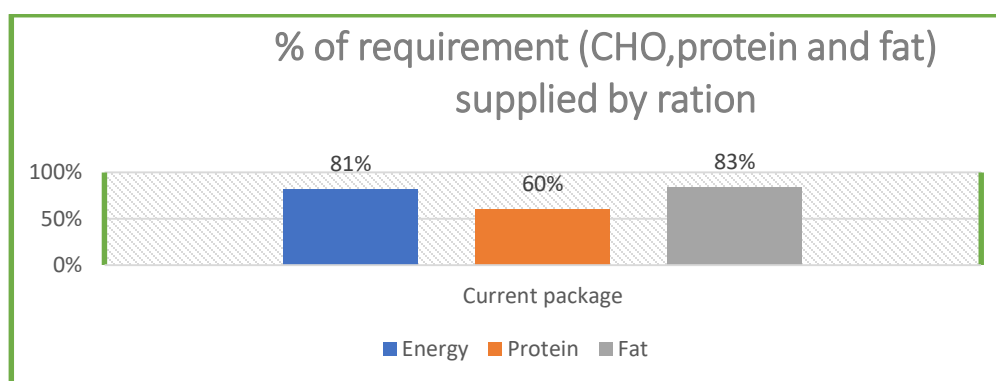
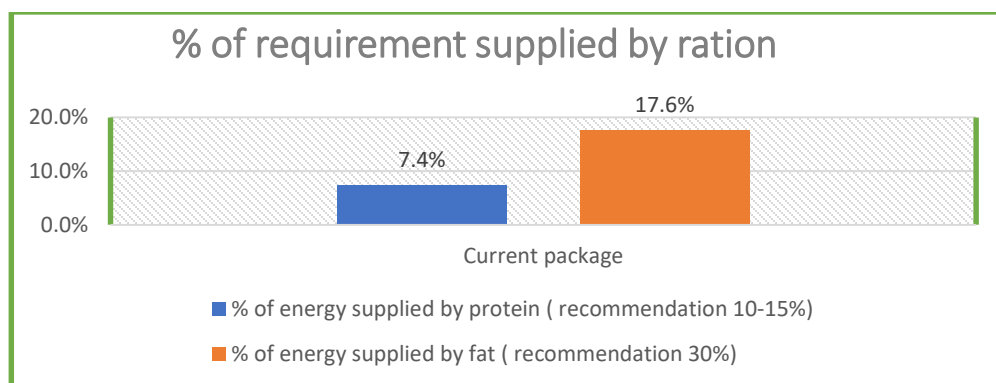
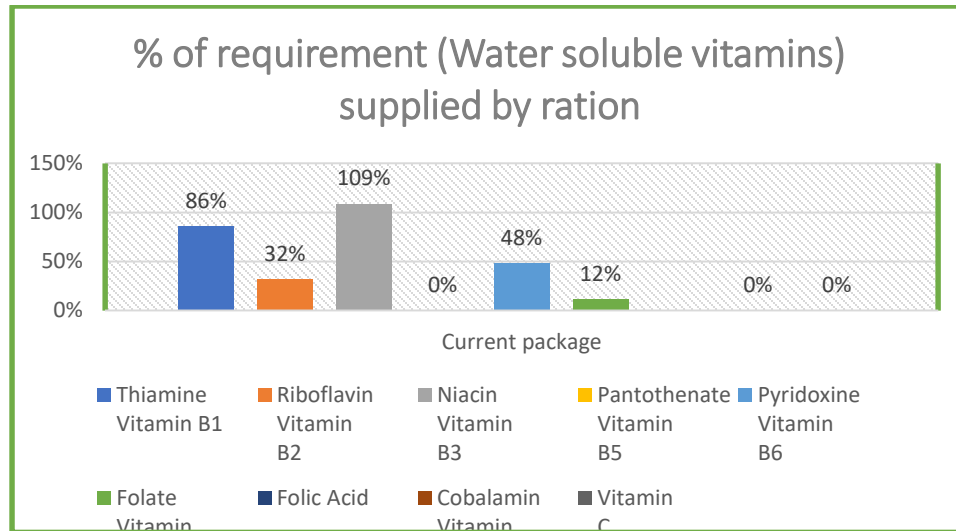


Fig 2: % of energy supplied by protein and fat of current ration



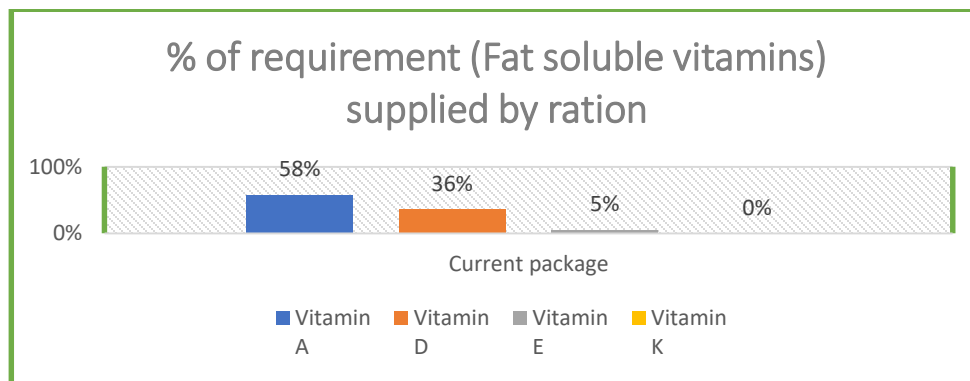
All water soluble vitamins except Niacin-B3 (109%) are below their daily requirements, for example, thiamin-B1 (86%), riboflavin-B2 (32%), Pantothenate-B5 (0), Pyridoxine-B6 (48%), folate (12%), Folic Acid, (0), cobalamin-B12 (0) and Vitamin C (0) ( Fig. 3).

Fig. 3: Vitamins (Water soluble) contents of the current food package



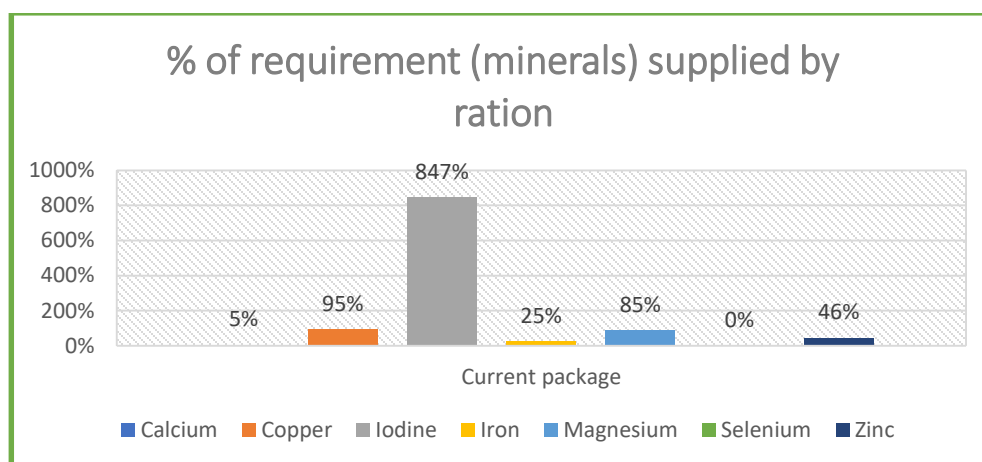
Among the fat-soluble vitamins, 58% of Vit. A, 36% of Vit. D and 5% of vitamin E, 0% of vitamin K are met, which are far below their requirements (Fig 4).

Fig. 4: Vitamins ( Fat soluble) contents of the current food package



- For mineral contents, except copper (95%) & magnesium (85%) all minerals content with public health problems are far below of the requirements. For example, Iron (25%), Zinc (46%), Selenium (0%) ( Fig. 5).
- Sodium/Iodine is 847% which is much higher than the required amount.

Fig. 5: Mineral contents of the current food package



***TOR 3: To recommend nutrition rich/balanced food basket/package for different age and target groups in consideration of the cost of the food, nutrition value, safety, availability, accessibility, transport, distribution, storage, and food preparation etc.***

Founded on the review of current food package the Technical/Expert Committee recommends the following food package/baskets for different age groups, considering food items, nutrition value, food safety, availability, accessibility, cost and food preparation (for children). However, this report doesn't cover the issues related to food management and logistics (e.g. transportation, distribution, storage, etc.).

## I. Proposed food relief for post disaster response

### 1. Immediate food response ( first 3 days after the disaster)

The food response during this period will be considered as a survival package applicable when people are in desperate need of food, e.g. at the shelters (in cyclone centers, river embankment etc.) or at home where there is no cooking facilities. The ration should be for first two to three (2-3) days for a 5 member family per household. This will provide about 1,525 Kcal/person/day, which will meet 73%, 55% and 36% of the daily energy, protein and fat requirements respectively (Table 2 and Figs 6). The package will provide 7.6% protein (against recommended 10-12%) and 8.6% fat ( against recommended 17%) Fig.7.

Table 2: Proposed general ration (immediate ration at the shelter for 3 days)

Commodity/ Food item	1 person per day		Ration for 5 persons for 3 days	Cost (BDT)
	gm/person/day	Energy (Kcal)	Kg/HH/3 days	
Flatten rice (Chira)	300	1068	4.5	
Sugar/Molasses	30	119	0.45	
Fortified Biscuits	75	338	1.13	
Total	405	1,525	6.75	
<b>Note:</b> Micronutrient profiles of rice flattened /chira and molasses are good compared to suji/semolina and white sugar. If there are difficulties to procure chira or molasses, the gap can be met by additional fortified biscuits. Water purifying tablets with instruction for use should be ensured by the health department.				

Fig 6: % of requirement (CHO, protein and fat) supplied by immediate ration

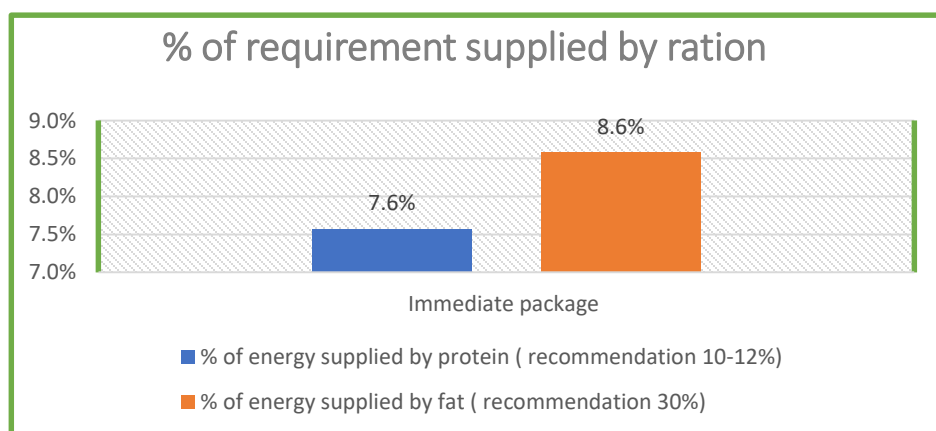
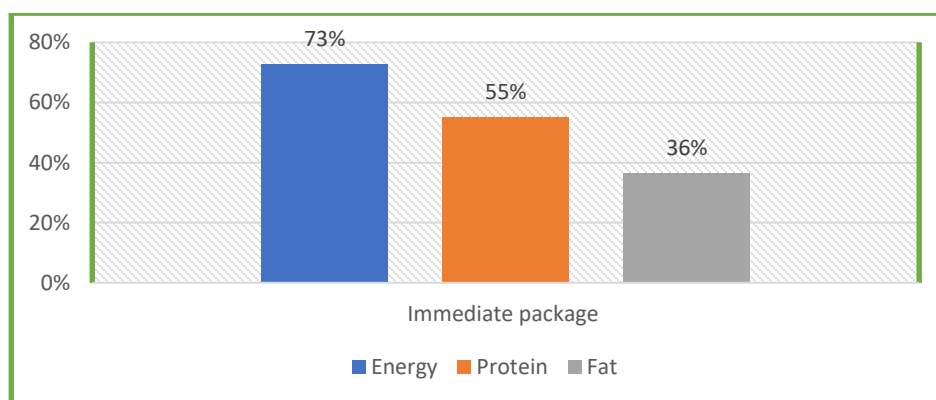
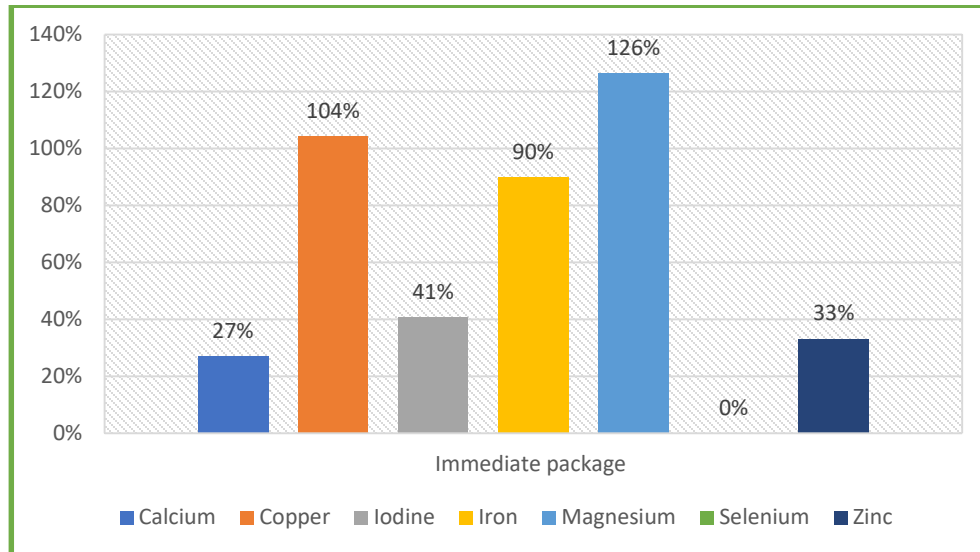


Fig. 7: % of energy supplied by protein and fat by immediate ration

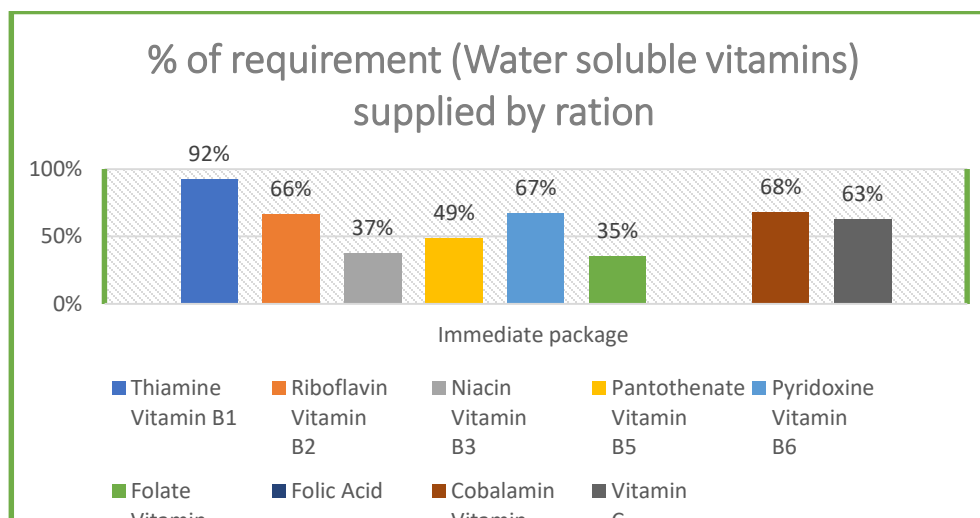
It is also evident that the package will meet almost 100% of minerals requirements such as, Iron, copper and magnesium, however, it will partly meet the required amount of a few important minerals like, calcium, iodine, zinc and hardly any selenium at all (Fig. 8).

Fig. 8: % of requirement (minerals and vitamin) supplied by immediate ration



A part of their daily requirements for all water soluble vitamins, for example, thiamin-B1 (92%), riboflavin-B2 (66%), Niacin-B3 (37%), pantothenate-B5 (49%), pyridoxine-B6 (67%), folate (35%), folic acid, (-), cobalamin (68%) and Vitamin C (63%) will be met (Fig 9).

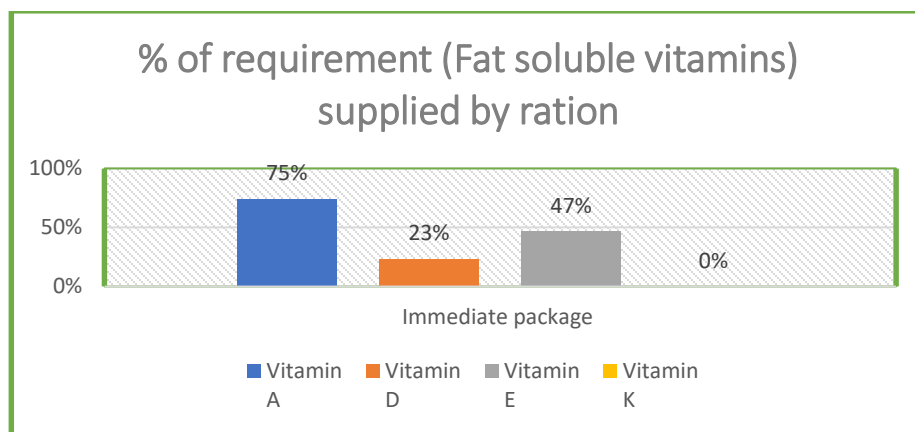
Fig 9: % of requirement (Water soluble vitamins) supplied by ration



Among the fat-soluble vitamins, 75% of Vit. A, 23% of Vit. D and 47% of vitamin E, 0% of vitamin K are met, which are far below their requirements (Fig 10).



**Fig 10. % of requirement (Fat soluble vitamins) supplied by ration**



## 2. General ration at household where cooking is possible

The recommended items and quantities of the general ration basket of dried food items are arranged in line with the international and national guidelines to cover all age groups (children, women and elderly) people in a family of total five members for 7 days (Table 3). The total requirements have been estimated to cover for both 7 and 10 day packages. Fortified food items for rice, vegetable oils, and iodized salt have been recommended. However, the committee recognizes that good coordination with Ministry of Food would be required to ensure an uninterrupted supply chain of fortified rice given the high demand it would be creating vis a vis the current in-country product capacity of fortified rice in particular.

The package will provide 2,121 Kcal/person/day, of which about 9.5% from protein and 18.7% from fat ( Table 3 and Fig. 11). This represents 101% energy, 96% protein and 110% of the fat requirements (Fig. 12).

It is evident from the Fig. 13 and Fig. 13 that though some of the water soluble vitamins (e.g. Thiamin, Folate, Pantothenate, Cobalamin, etc.) exceed 100% of the requirements, but they are within their upper tolerable limit. In addition, as these are water soluble vitamins excess would be losing during washing, cooking of the foods. After absorption excess water soluble vitamins will be excreted from the body through urine. On the other hand, of the fat soluble vitamins (A,D,E,K) except Vitamin A, all others are below the required amount ( Fig. 14). The proposed ration provides the required amount of mineral except calcium (Fig.15).

Following messages/instructions should be added on the supply bag with the food package:

- Includes molasses/brown sugar instead of white sugar as it is healthier and provides more minerals. Therefore, where possible/available please add molasses/brown sugar

- Include seasonal fruits, vegetables and roots which contain Vitamin-C, i.e., Guava and amloki, etc..
- Ensure use of safe water for drinking and soaking of chira ( use water purifying tablet if needed). Please add proper instruction.
- Include also some calcium rich fruits and vegetables.

Table 3: Food items/commodity, requirements, quantity of each item

General package at household level				
Commodity	1 day/person		7 days for a HH (5 members)	10 days for a HH (5 members)
	gm/p/ day	Energy (Kcal)	Kg/HH/7 days	Kg/HH/7 days
Rice*	345	1242	12.08	17.25
Fortified vegetable oil	40	354	1.40	2.00
Pulse**	40	127	1.40	2.00
Chira	50	178	1.75	2.50
Iodised salt	5	0	0.18	0.25
Sugar/ Molasses**	6	24	0.21	0.30
Motor dal or Mung dal vaja	60	196	2.1	3.00
<b>Total</b>	<b>546</b>	<b>2,121</b>	<b>19.11</b>	<b>27.30</b>

\*Fortified rice is preferable to fill up the micronutrient requirement of the affected population

\*\* Except khesari dal; Lentil was considered during nutrient calculation.

\*\* The nutrient profile of molasses of good compare to sugar.

Fig 11. % of requirement supplied by ration

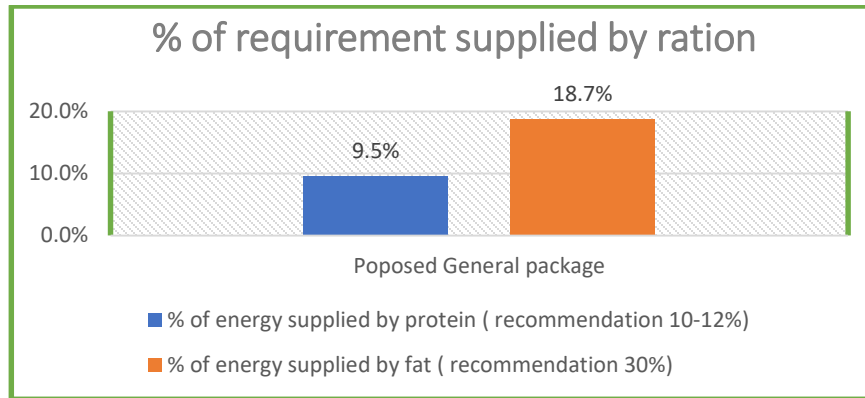


Fig 12. % of requirement (CHO, protein and fat) supplied by ration

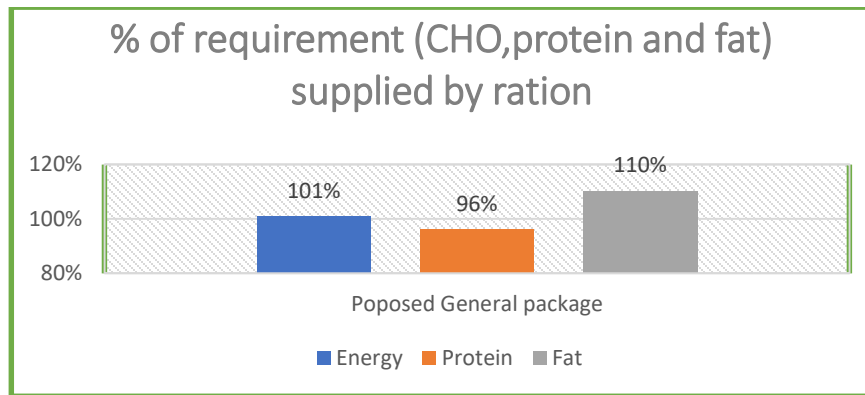


Fig. 13. % of requirement of water soluble vitamins

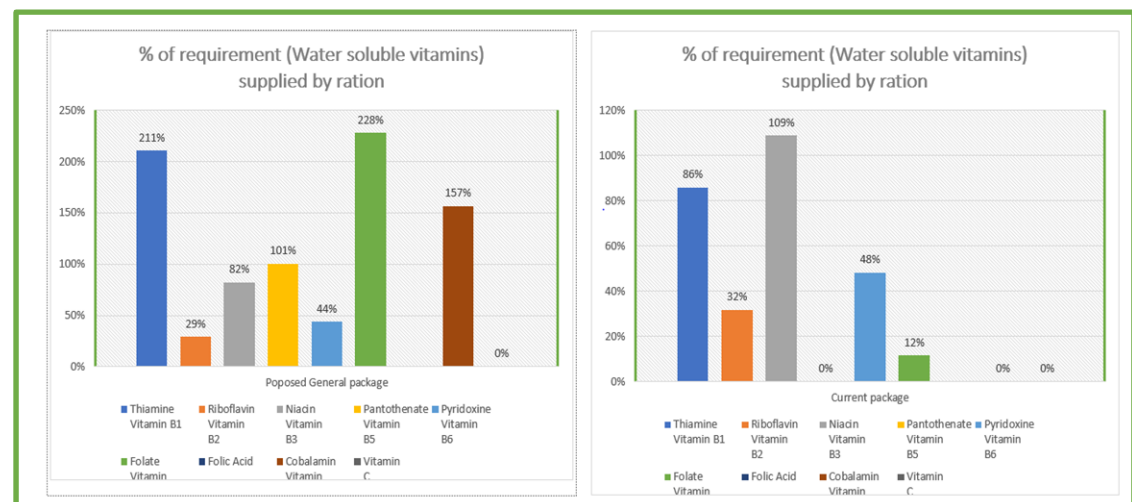
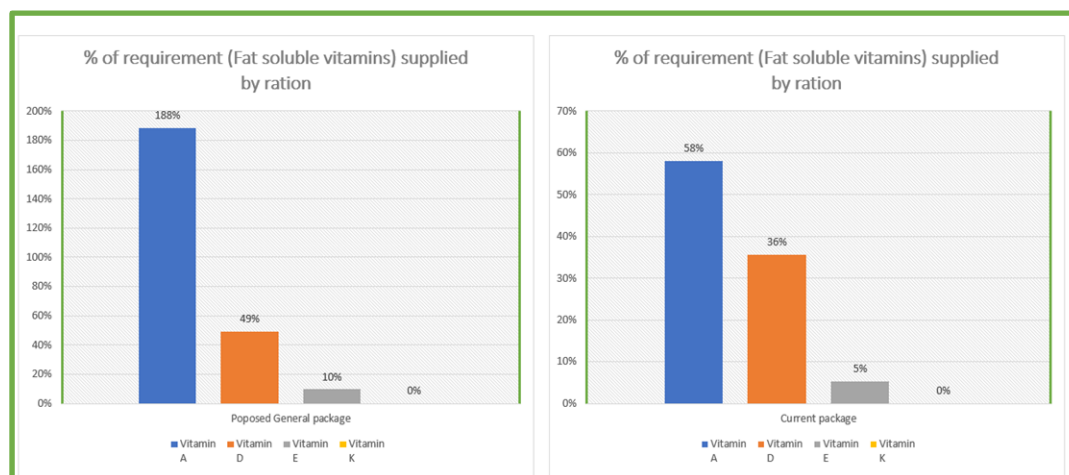
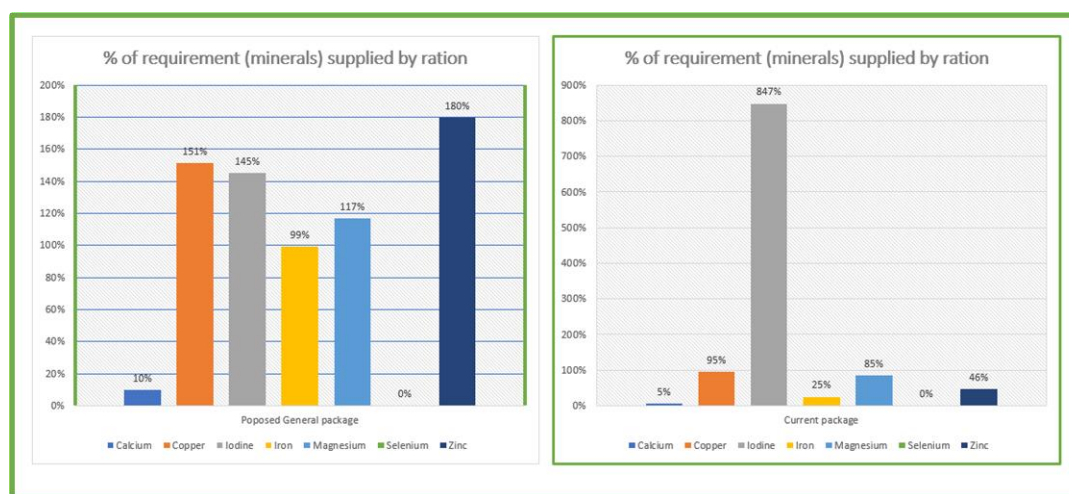


Fig. 14. % of requirement of fat soluble vitamins



Fi. 15. % of requirement of minerals



### Instructions for General Food Package

- Includes fortified rice instead of normal rice. Without fortified rice it is difficult to fill up micronutrients (Vitamin A, Vitamin B, B12, folic acid, iron and Zinc) of the affected population
- Includes molasses/brown sugar instead of white sugar as it is healthier and provides some minerals
- Include seasonal fruits and roots which contain Vitamin-C, i.e., Guava and amlaki ( see the list fruits and vegetables in Annex)
- Ensure use of safe water (Add purified tablet if needed)

## **II. Food package for children (under-five) during disaster**

Children under 5 are particularly nutritionally vulnerable during a disaster, as they require frequent feedings of diverse and nutrient-dense foods. Lactating women need support to prevent discontinuation of breastfeeding due to the emergency. Breast milk is the ideal food for healthy growth and development of infants and young children. During a disaster breastfeeding provides a fundamental means of preventing malnutrition and mortality among infants and young child. Therefore, we must protect and promote breastfeeding until the age of 2 years even during the disaster.

During the complementary feeding period, older infants and young children require foods that are easily digestible. These should be safely prepared from locally available foods that are rich in energy and micronutrients to meet the infants' changing nutritional requirements. This can be a significant challenge during disaster, since constraints often exist. Available foods may be difficult to prepare into a soft, semi-solid form. In disaster situations, there are a number of foods that can be used for the preparation of suitable complementary foods.

### **Review of current package**

- The technical team found the prepared list of food items of MoDMR for the current COVID-19 crisis as quite extensive, thoughtful and highly appreciable. Nevertheless, purchase and use of any kind of milk powder milk to use as a baby food during disaster is against the recommended international and national guidelines. *Furthermore, this contradicts the existing BMS Act 2013 [i.e. Breast-milk Substitutes, Infant-Foods, Commercially Manufactured Complementary Foods and Accessories Thereof ( Regulation of Marketing)], which was gazette on the 22th September,2013.*
- The committee also observed that “quality ready-made food” are included in the baby food list. Without proper guideline, it would be difficult to monitor whether unhealthy processed available in the market are included in the list. It is therefore, recommended to take out this food item/s from the list.
- Age group of the children in the instruction is not mentioned. Specific age group ( 6-59 months should be mentioned otherwise it may create confusion in selection of food items.

### **1. Food Package for Children during disaster (general)**

Following issues were considered in energy and nutrient calculation

- The child food package (including most of its item/commodities) which was circulated by the Ministry of Disaster Management and Relief (MoDMR) has been used except “Milk Vita Milk powder” sugar and “quality ready-made food”.
- Compliant to the international and national guidelines.
- 1,076 kcal was taken as an estimated average (weighted) of energy requirement for children 6-59 months. Of the total energy, supplies of minimum of 10% and a

maximum of 15% of dietary energy as protein and supplies of at least 30% of dietary energy as fat.

- One RNI (weighted average) of micronutrients for the requirement of children.
- Along with food items, a few tables of recipes have also been prepared and included in the final recommendations.
- In the preparation of a seven and ten day child food package, two (2) children aged 6-59 for each family were taken into account.

**Committee also took note of the following concern about food items:**

- Shelf life of each food item
- Cultural acceptability, whether readily available
- Use of fortified foods (rice, oil, salt and biscuits) as much as possible
- Cost of items/ food package

## **2. Proposed Food Package for Children During COVID-19 crisis**

During the COVID-19 Crisis same general package for children is recommended. In addition, a certain amount cash is also recommended so that fresh fruits and vegetables can be purchased and used for children diet. As basic household food ration does not by themselves readily meet the high nutritional needs of children and ensure the minimum dietary diversity. Therefore, the committee recommend to make sure that top up cash be provided to children in addition to the ration.

### **Food Package for Children during disaster (general)**

The recommended basket will provide a total of 1,094 Kcal/person/day of which 10.2% and 30.1% will come from protein and fat respectively and remaining 59.7% from carbohydrate (Table 4 and Fig. 16). Furthermore, proposed food items will meet 102 of the energy, 103% of protein and 102% of fat requirements (Fig. 17).

For water soluble vitamins (A and E) 100% of their requirements. Vitamin C intake is low at 60%. Moreover, 40-50 percent of vitamin C will become inactive by cooking and excess will excreted through urine. Though some of them exceed the 100% requirements, however, they are within their upper tolerable limits. For example, Thiamin-B1 (223%), Riboflavin-B2 (122%), Niacin B3 (181%), Pantothenate-B5 (145%), Pyridoxin-B6 (192%), Folate-B9 (226%), Cobalamin-B12 (240%) (Fig. 18).

For fat soluble vitamins, vitamin A (120%), vitamin E (125%) are above 100% requirements but within upper tolerable limits. Most of Vit A comes from plant foods in the form of beta-carotene which has no toxic effect rather it has anti-oxidant role. On the other hand, vitamin D (52%) and vitamin K (0%) intake will be low (Fig. 19).

It is revealed that, though two minerals (magnesium and Iron) will exceed the 100% requirements ( One RNI), however, they are within their upper tolerable limits. On the other

hand, a few minerals (e.g. calcium, iodine, selenium and zinc) are below their requirements (Fig. 20).

**With food basket following instructions/messages should be included:**

**Instructions/Messages:**

- Includes molasses/brown sugar instead of white sugar as it is healthier and provides some minerals.
- Include seasonal fruits and roots which contain Vitamin-C, i.e, Guava and amloki and Vitamin A in orange sweet potato. Vitamin C and Zinc has capacity to boost the immune system. List of Vitamin C and Zinc rich sources of commonly consumed foods of Bangladesh is provided in Annex 6 &7.
- Add Fortified salt into Khichuri
- If available, add an animal protein source (i.e., egg) and fresh seasonal vegetables e.g. tomato
- Add a bit of ginger and garlic into Khichuri recipe
- While adding roasted peanut, make sure to lightly powder or grind it ( See Annex XX)
- Ensure use of safe water (Add purified tablet if needed)
- Use just enough water while cooking rice - in case of excess water, use it in dal or other preparations
- Nutrition messages with focus on hygiene and nutrition
- Add water purifying tablets
- Instruction/guidelines- leaflet

Table 4: Required food items, energy value and their quantities for 7 and 10 days ration

Child package				
Commodity	1 day/person		7 days for a HH (2 under five)	10 days for a HH (2 under five)
	gm/p/ day	Energy (Kcal)	Kg/HH/7 days	Kg/HH/10 days
Rice*	90	324	1.26	1.80
Fortified vegetable oil	15	133	0.21	0.30
Pulse**	20	63	0.28	0.40

Suji/Semolina	20	69	0.28	0.40
Fortified biscuit	75	338	1.05	1.50
Sugar/ Molasses**	5	20	0.07	0.10
Ground nut/peanut roasted	20	117	0.28	0.40
Dates	20	30	0.28	0.40
<b>Total</b>	<b>265</b>	<b>1,094</b>	<b>3.71</b>	<b>5.30</b>

\*Fortified rice is preferable to fill up the micronutrient requirement of the affected population

\*\* Except khesari dal; Lentil was considered during nutrient calculation.

\*\* The nutrient profile of molasses of good compare to sugar.

Fig.16. % of requirement supplied by ration

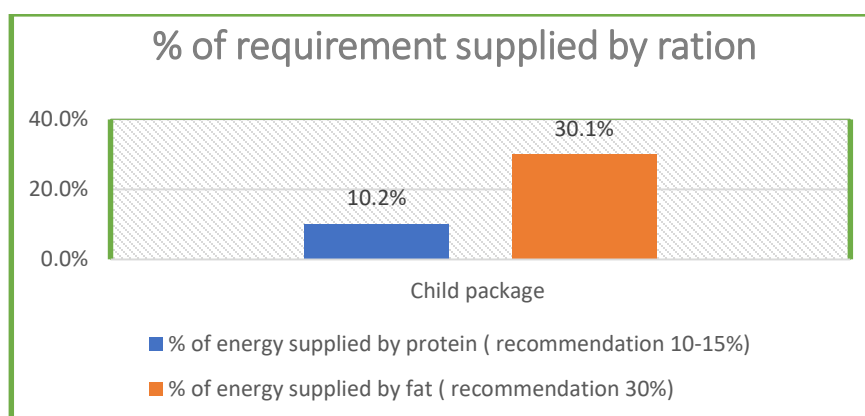


Fig. 17. % of requirement (CHO, protein and fat) supplied by ration

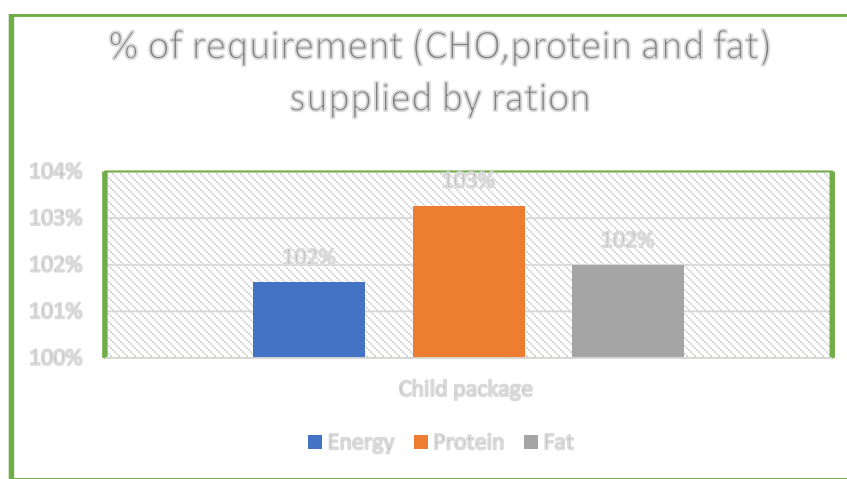


Fig. 18. % of requirement (Water soluble vitamins) supplied by ration



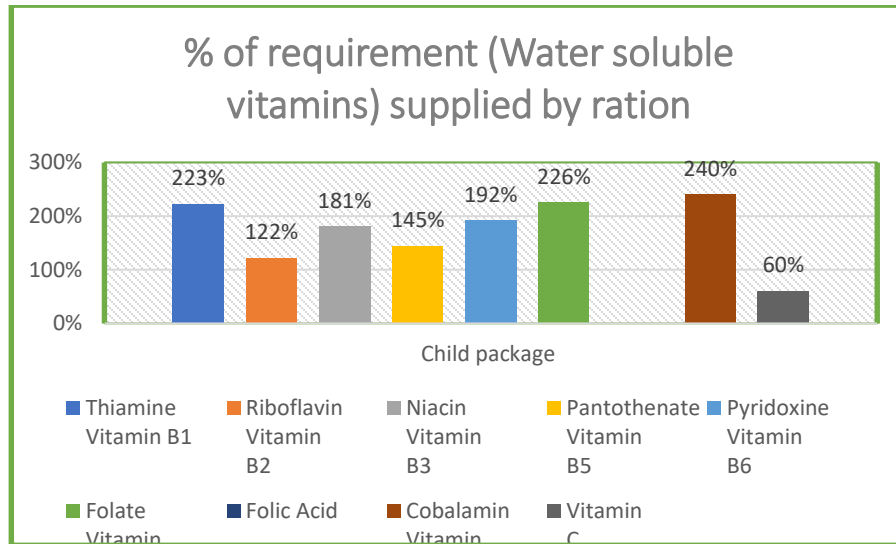


Fig. 19. % of requirement (Fat soluble vitamins) supplied by ration

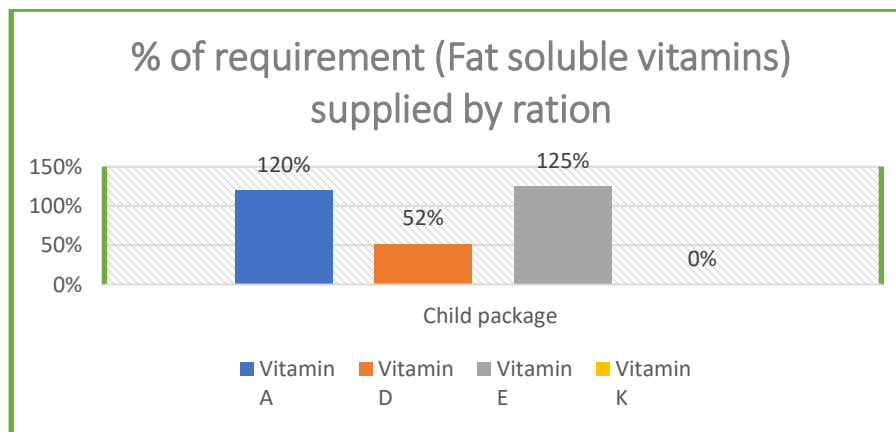
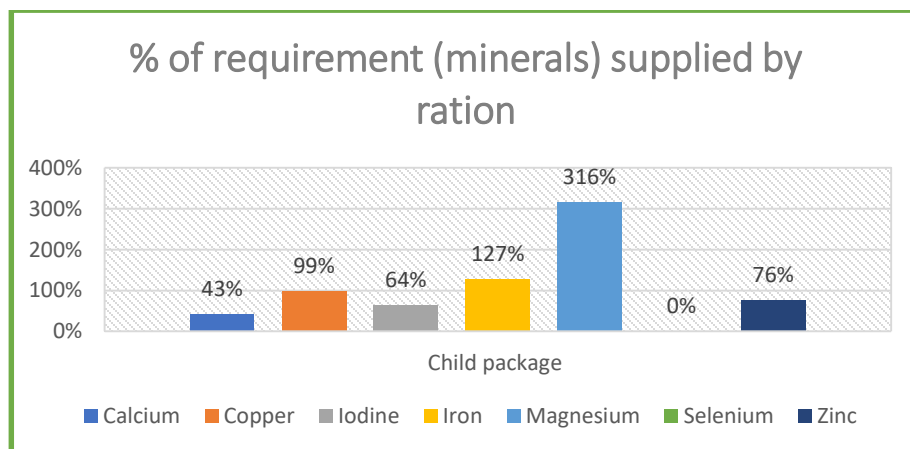


Fig. 20. % of requirement (minerals) supplied by ration



**Recommended convenient food for children with recipes**

### **Vegetable Khichuri**

- Is a nutritious and easy-to-prepare and affordable dish using local foods/ingredients such as rice, lentil, vegetables, turmeric, cumin, salt and oil
- It can fulfill a little less than 1/3 of the day's energy and protein requirement of a young child.
- The combination of cereals and lentils in a proportion of 2:1 enhances the protein quality due to mutual supplementation of cereal and pulse proteins.
- The energy density of the recipe is increased with the addition of oil which also helps improve absorption of pro vitamin A from vegetables like carrot, pumpkin that are used in khichuri.
- If feasible, add an egg to the khichuri to provide animal source protein and enhance nutrient bioavailability.

*Ingredients (g): Rice 40, lentil 20, roasted powdered groundnut 5, carrot 15, cow pea 15, spinach 15, oil 10, onion 20, spices (ginger, garlic and turmeric powder) 5, water 370 ml*

*Nutritive value: Energy (kcal) 351, protein (g) 10.58, CHO (g) 44.84, Fat (g) 4.59*

*Method: Heat a pot, add oil, sauté chopped onion and ginger-garlic paste for a few minutes, and then add cleaned and washed rice and pulse and groundnut powder. Saute for 1 – 2 mins. Add water and cover the pot. When rice and lentils are half done, add the cleaned, washed and chopped vegetables. Cook until all ingredients are soft and ready to eat.*

### **Egg semolina**

- Egg semolina is a main meal dish for children, using a combination of egg, semolina (suji) , ash gourd, carrot, molasses and oil. Suji is considered as the first additional food for children in Bangladesh. It provides energy and protein
- Egg is good source of energy, good quality protein, iron, essential fatty acids, and vitamins A, D, E and B complex.
- Ash gourd is also a fair source of minerals and vitamins
- Oil used helps to meet high energy requirement and to absorb fat soluble vitamins

*Ingredients (g): Semolina 30, Egg 50, Ash gourd 15, Carrot 10, Molasses 15, Oil 5, Water 165 ml*

*Nutritive value: Energy (kcal) 281, protein (g) 10.75 CHO (g) 36.26, Fat (g) 9.97*

*Method: Heat a pan and roast suji for few minutes, add in water and stir. Add washed and chopped vegetables in the suji. Cook slowly, stirring all the time until it comes to boiling point and thickens. Add egg and mix well. Add molasses, oil and cook till done.*

### **Suji Halwa**

- “Sujir halwa” is a commonly prepared sweet dish in Bangladesh

- The recipe is a good combination of semolina, milk, sugar and coconut
- Semolina is a rich source energy, some B complex vitamins and protein. Addition of milk improves the protein quality while sugar contributes to additional energy in the diet.
- Carrot improves the diversity and provides some provitamin A in the dish
- In this recipe, coconut has been used as an extra source of fat which along with added fat helps to meet energy requirement.

*Ingredients (g): Semolina 20, Milk 200 ml, Sugar 20, Coconut 10, Carrot 15*

*Nutritive value: Energy (kcal) 180, protein (g) 5.93 CHO (g) 23.97, Fat/oil (g) 6.52*

*Method: Roast suji for a few minutes on a medium flame until golden brown. Add milk and grated carrot. Once well cooked, add sugar. Keep stirring to avoid lump formation and sticking to the bottom on the pan. Once done, add in coconut. When halwa leaves the pan, it is cooked and ready to be served.*

#### **Nutrition responses during COVID-19 Crisis period (Additional task added to the TOR by the Technical/Expert Committee)**

COVID-19 has the potential to worsen malnutrition as it is likely to cease economic opportunity and thus to accessibility and affordability to purchase. Fear of high transmission of COVID-19 could lead either to a decrease in breastfeeding and or to increase in the use of infant formula or other substitutes. Highly likely economic disruption and lockdown procedures may increase the price of nutritious foods. The health system will be at risk of overloading and its capacity to provide nutrition services will be further weakened. Case load of SAM (Severe Acute Malnutrition) could be increased and uptake of outpatient and inpatient for SAM management will be interrupted and utilization of preventive nutrition services which is already low will be lower due to restricted movement.

Proper nutrition is fundamental to building block to put up immunity, protect against illness and infection, and support recovery. Actions to preserve and promote proper nutrition, including breastfeeding are essential approaches for prevention of COVID-19 now and for future in order to build the resilience of individuals and communities. While no foods or dietary supplements can prevent COVID-19 infection, maintaining a healthy diet is an important part of supporting a strong immune system. Healthy, nutritious diets are critical for boosting immunity and preventing non-communicable diseases that are risk factors for higher COVID-19 morbidity and mortality.

#### ***Following issues were considered for developing the food packages for general population and Children:***

1. Adopted the general food ration (dry food) package for adult and general food packages for children
2. Built on the government's current relief package

**Assumptions:**

- 20% of the energy requirements will come from own family pots, rest 80% from ration. It is assumed that during COVID-19 people will live a sedentary life due to imposed lockdown and thereby less physical activities.
- A family of 5 members per household
- Food basket to cover 10 days (aligning with the quarantine period)
- Modalities will be both in kind and cash provision. An amount of BDT 1,365/per family for 7 days is recommended to buy fresh vegetables, fruits, fish/meat and spices to complement the dry food package. This is to ensure provision of a balanced diet which is essential to boost immunity. In addition, it will also help to maintain the food chain, which has broken down in many places. This will help the local economy to continue.
- The estimated costs of the fresh vegetables, fruits, fish/meat and spices have been determined at BDT 1,365 for a family of 5 members for 7 days duration.

**Meeting the Energy and Micronutrient needs during the COVID-19 crisis for adults**

The proposed/recommended food basket for general relief during COVID-19 crisis will provide a total of 1,702 Kcal/person/day, of which 13.9% comes from protein and 20% from fat, the rest 66% is from carbohydrate (Table 5 and Fig. 21). It is also revealed that the proposed food items meet 81%, 112% and 94% of the energy, protein and fat requirements (Fig. 22).

Though some of the water soluble vitamins (e.g. Thiamin-B1, Niacin-B3, Pyridoxine-B6, and Vitamin C) exceed the 100% requirements, however, they are still within their upper limit of the requirements. Moreover, 40-50 percent of vitamin C will become inactive by cooking and excess will be excreted through urine. On the other hand, Riboflavin-B2, Pantothenate, Folate-B9, Folic Acid, and Cobalamin-B12 are below the recommended level (Fig. 23).

Among the fat soluble vitamins, Vitamin A and Vitamin D exceed the 100% requirements (but within the upper limit), and vitamin E and K are far below the recommended requirements (Fig. 24). Most of Vitamin A comes from plant foods which are in the form of beta-carotene which has no toxic effect rather it has an anti-oxidant role.

For minerals like Copper, Iodine and Magnesium levels exceed the 100% requirements (but within their upper limit); and Calcium, Iron and Selenium levels are below the requirements (Fig. 25).

Table 5: Food commodity, requirements, energy content for 7 and 10 days

Food Package for COVID-19 (Adult)				
Commodity	1 day/person		7 days for a HH (5 members)	10 days for a HH (5 members)
	gm/p/ day	Energy (Kcal)	Kg/HH/7 days	Kg/HH/7 days
Rice	285	980	9.98	14.25
Fortified vegetable oil	30	265	1.05	1.50
Lentil	30	95	1.05	1.50
Onion	30	18	1.05	1.50
SALT, IODISED	5	0	0.18	0.25
Potato	150	99	5.25	7.50
Holud	5	17	0.18	0.25
Dhonia	5	17	0.18	0.25
Jira	5	20	0.18	0.25
Telapia, kata chara	100	110	3.50	5.00
Kancha morich	15	7	0.53	0.75
Chilli, red, dry	5	16	0.18	0.25
Borboti	60	23	2.10	3.00
Mistikumra	60	11	2.10	3.00
Lal shak	75	24	2.63	3.75
<b>Total</b>	<b>860</b>	<b>1,702</b>	<b>30.1</b>	<b>43.00</b>

Fig. 21: % of requirement of protein and fat by ration

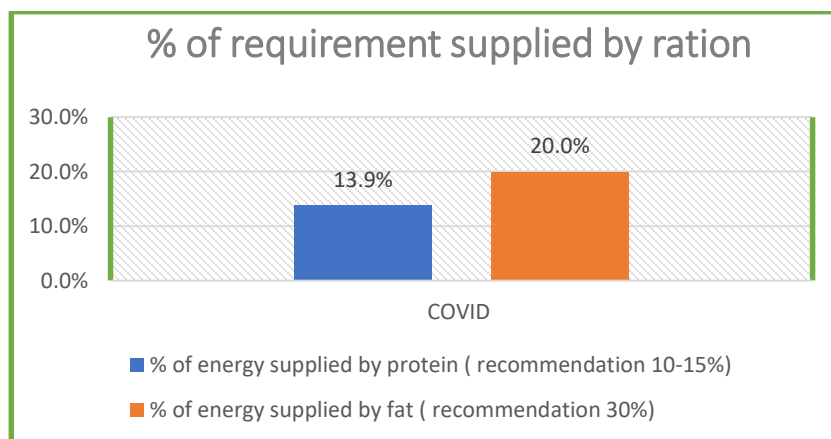


Fig 22. % of requirement (CHO, protein and fat) supplied by ration

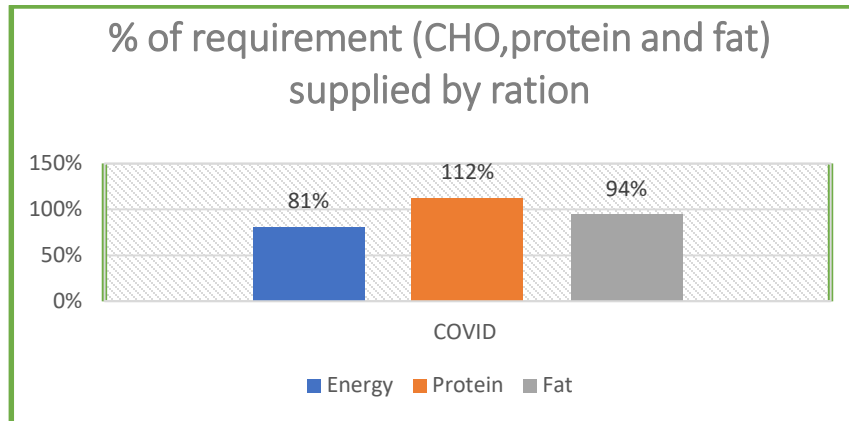


Fig. 23: % of requirement (water soluble vitamins) supplied by ration

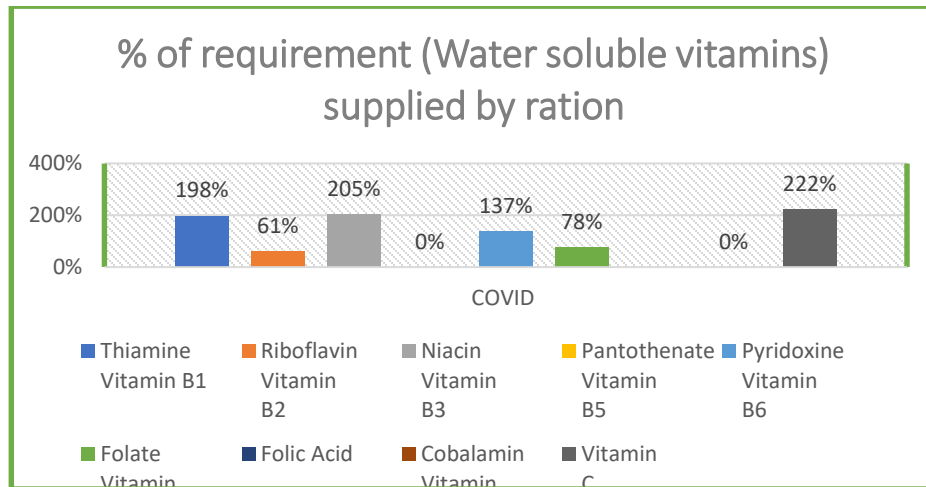


Fig 24: % of requirement (fat soluble vitamins) supplied by ration

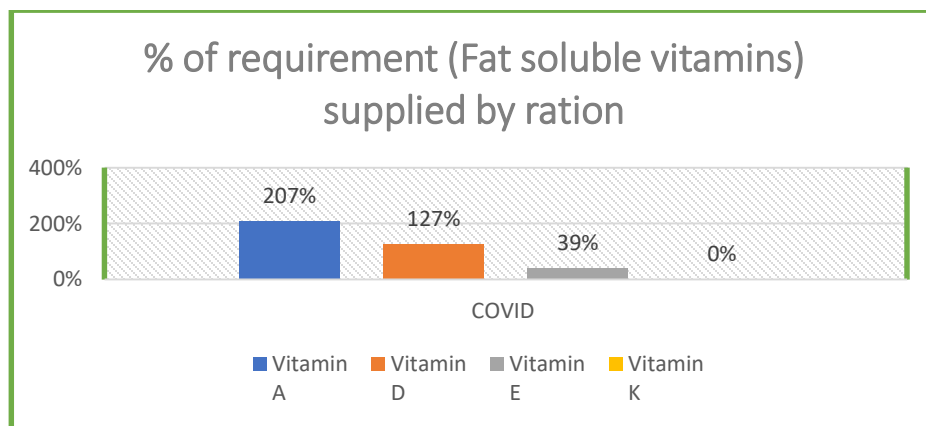
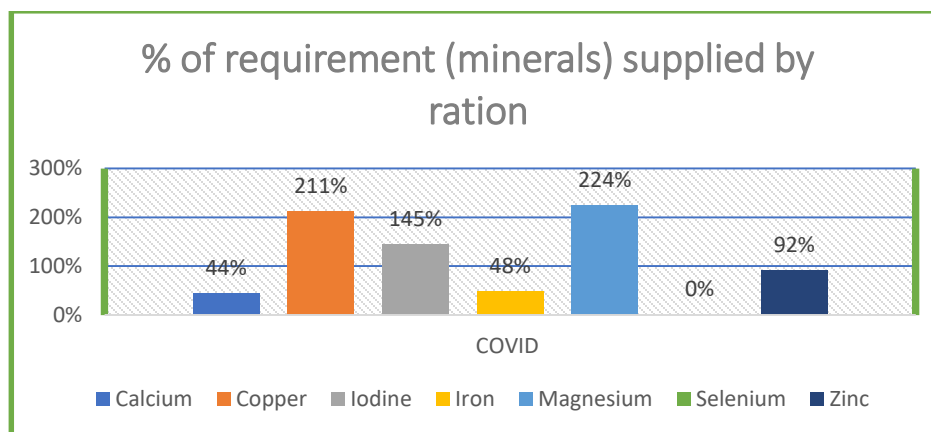


Fig 25: % of requirement (minerals) supplied by ration



### Messages during COVID-19.

Two sets of nutrition specific messages have been developed by the Technical/Expert Committee targeting both adults and children during COVID-19. Please see the Annex 8.

### References

Management of Nutrition in Major Emergency (WHO 2000)

- Human Energy Requirements, Report of a Joint FAO/WHO/UNO Expert Consultation, Rome, 17-24 October 2001
- Food and Nutrition needs in Emergency (UNHCR/UNICEF/WHO/WFP, 2002)
- Vitamin and Mineral requirements in Human Nutrition, Second Edition, (WHO/FAO (2004)
- Food Composition Table for Bangladesh (2014), INFS/GoB/USAID/EU/FAO
- Improved Recipes for Complementary Feeding of Children Aged 6-23 Months (2014) BBF/GoB/USAID/EU/FAO
- Dietary Guidelines for Bangladesh (2015) IRDEM/MoHFW/MoFood/USAID/EU/FAO

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**Annex: 1. Office order for the formation of the Technical/Expert Committee.**

(একই স্মারক ও তারিখের প্রযোজ্য)

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

স্বাস্থ্য ও পরিবার কল্যাণ মন্ত্রণালয়

স্বাস্থ্য সেবা বিভাগ

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তারিখ : ১২ মার্চ ২০২০ খ্রিষ্টাব্দ  
২৮ ফাল্গুন ১৪২৬ বঙ্গাব্দ

**অফিস আদেশ**

দুর্যোগপ্রবৃত্তি জনগোষ্ঠীকে প্রদত্ত শুল্কনা খাবারের প্যাকেটসহ বিভিন্ন খাদ্য সাহায্যের পুষ্টিমান উন্নয়নের লক্ষ্যে একটি কারিগরি/বিশেষজ্ঞ কমিটি গঠনপূর্বক সুপারিশ প্রদানের নির্দিষ্ট কূর্ণিগ খাবাদ্বাপনা ও ত্রাণ মন্ত্রণালয় কর্তৃক পাধ্য সেবা বিভাগকে অনুমোদন করা হয়। সেমোতাবেক দুর্যোগপ্রবৃত্তি এলাকার বিভিন্ন বয়স ও টার্গেট গ্রুপের জন্য খাদ্য চাহিদা নির্ধারণ, প্রদত্ত খাদ্য সাহায্যের পুষ্টিমান ও পুষ্টিমান উন্নয়ন সংক্রান্ত সুপারিশ প্রদানের নিমিত্ত খাদ্য সেবা বিভাগ নিম্নোক্ত কারিগরি/বিশেষজ্ঞ কমিটি গঠন করিলেন।

০১) কমিটির গঠন (জোড়তা অনুসারে নয়) :

i.	মহাপরিচালক, বিএনএমসি	আইসিআই
ii.	প্রতিনিধি, দুর্যোগ ব্যবস্থাপনা ও ত্রাণ মন্ত্রণালয়	সদস্য
iii.	প্রতিনিধি, বিশ্ব খাদ্য কর্মসূচি	সদস্য
iv.	নিউট্রিশন কন্সাল্ট্যান্ট-জুনিয়র, ইউনিসেফ	সদস্য
v.	প্রতিনিধি, বিশ্ব স্বাস্থ্য সংস্থা	সদস্য
vi.	চাইল্ডম্যান, সিবিআই	সদস্য
vii.	অধ্যাপক মাহমুদা শাহীন, পুষ্টি ও খাদ্য বিজ্ঞান ইনস্টিটিউট, ঢাকা বিশ্ববিদ্যালয়	সদস্য
viii.	জনস্বাস্থ্য এ এক এম ইকবাল করীম, বনগালডাঙ্গা, বিএনএমসি	সদস্য
ix.	ডা. কমরুজ্জামান, প্রিন্সিপাল রিসার্চ অফিসার, বারডেম	সদস্য
x.	ডা. লসিতা ভল্লভর্ষ, সিনিয়র নিউট্রিশন এডভাইজার, একএও	সদস্য
xi.	সাইন ডিরেক্টর, এনএনএস, আইপিএইচএম ডবল, মহাশয়ী, ঢাকা	সদস্য, সভাপতি

০২) কমিটির কার্যবিধি :

১) কমিটি দুর্যোগপ্রবৃত্তি জনগোষ্ঠীর পুষ্টি সুবিধা হসে-

- ক) কূর্ণিগপ্রবৃত্তি এলাকার বিভিন্ন বয়স ও টার্গেট গ্রুপের জন্য খাদ্য চাহিদা নির্ধারণ করবে।
- খ) প্রদত্ত খাদ্য সাহায্য (প্যাকেট) খাবারের পরিমাণসহ আইটেম সংহতি ১) পুষ্টিমান নির্ধারণ করবে।
- গ) খাবারের মূল্য, পুষ্টিমান, নিরাপত্তা, সহজলভ্যতা, গ্রহণযোগ্যতা, পরিবহন, বিতরণ, গুলমজ্ঞানতন্ত্র, খাদ্য প্রস্তুতকরণ ইত্যাদি বিষয় বিবেচনাপূর্বক বিভিন্ন বয়স ও টার্গেট গ্রুপের জন্য পুষ্টিমূল্য মূল্য বাজ্জা/প্যাকেটের বিষয়ে সুপারিশ করবে।
- ঘ) কমিটি আগামী ৩০ (ত্রিশ) কর্মদিবসের মধ্যে নিয়ন্ত্রণকরকারীকে পুষ্টি আকর্ষণপূর্বক সচিব, স্বাস্থ্য সেবা বিভাগের নিকট কার্যপরিধি অনুসারে সুপারিশ প্রেরণ করবে।
- ঙ) কমিটি প্রয়োজনে বিশেষজ্ঞ সদস্য কো-অপ্ট করতে পারবে।

০৩) যথাস্থ কর্তৃপক্ষের অনুমোদনক্রমে এই আদেশ জারি করা হলো এবং তা অবিলম্বে কার্যকর হবে।

  
ড. মোহাম্মদ মোস্তাফিজ  
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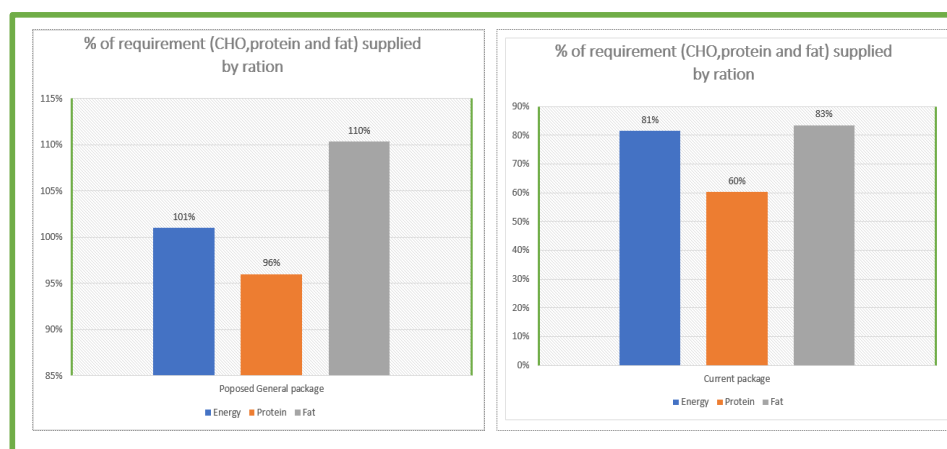
স্বাক্ষর পাঠ ১২



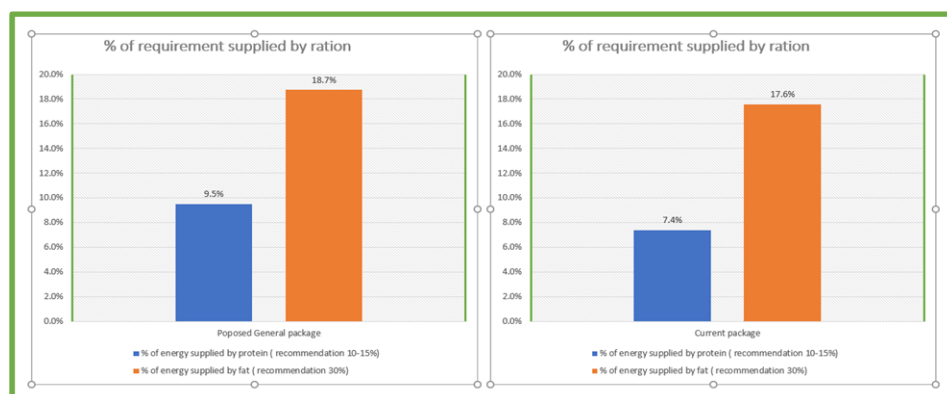
## Annex: Sub-groups:

General Food Package Sub-group	Child Food Package Sub-group	COVID 19- Food Package Sub-group
Prof. Nazma Shaheen (Group Leader) Dr. Lalita Bhattacharjee A F M Iqbal Kabir Md. Sameul Nawaz Tonima Sharmin Mohammad Rony Hossain Farhana Sharmin Khurshid Jahan	Piyali Mustaphi (Group Leader) A F M Iqbal Kabir Md. Sameul Nawaz Asfia Azim Faria Shabnam Farhana Sharmin Dr. SK Roy <b>Mohammad Hafijul Islam</b>	A F M Iqbal Kabir (Group Leader) Prof. Nazma Shaheen Dr. Lalita Bhattacharjee Md. Sameul Nawaz Asfia Azim Faria Shabnam Farhana Sharmin Dr. Kamrunnahar

## Annex 2: Comparison between proposed ration and current rations

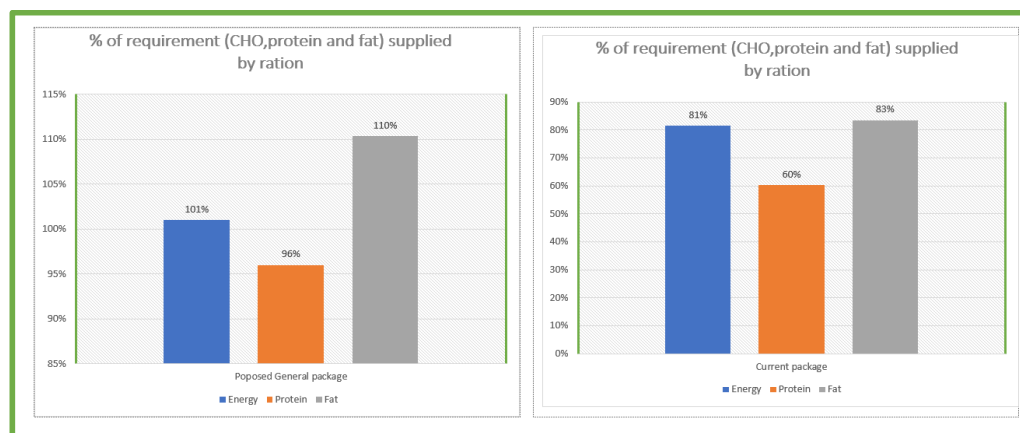


## Annex3 : Comparison between proposed ration and current rations

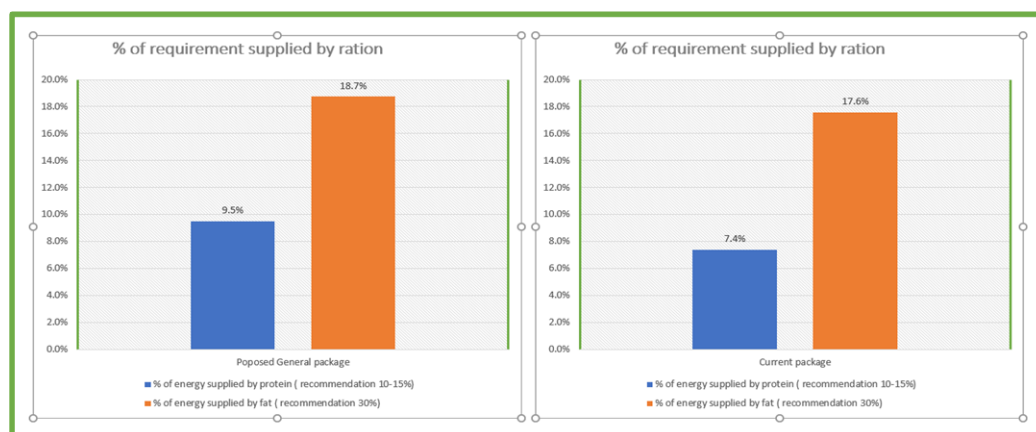


Annex 4 :

## Comparison between proposed ration and current rations



## Annex 5 : Comparison between proposed ration and current rations











## Annex 6: Food rich in Vitamin C

		ভিটামিন সি				
ফলমূল	সবজি	 আমলকি ৪৫৩ মিলি গ্রাম	 পেয়ারা ২২৮ মিলি গ্রাম	 জাম্বুরা ১২২ মিলি গ্রাম	 আম ১০৩ মিলি গ্রাম	 আমড়া ৭৭ মিলি গ্রাম
		 জাম ৭৪ মিলি গ্রাম	 বরই ৬৬ মিলি গ্রাম	 পাকা পেঁপে ৬২ মিলি গ্রাম	 কমলা ৫৪ মিলি গ্রাম	 লেবু ৪৬ মিলি গ্রাম
		 সজনে পাতা ২২০ মিলি গ্রাম	 কাঁকরোল ৯৯ মিলি গ্রাম	 কাঁচা মরিচ ১০২ মিলি গ্রাম	 করলা ৯১ মিলি গ্রাম	 ফুলকপি ৭৩ মিলি গ্রাম
		 কালো কচুশাক ৬৩ মিলি গ্রাম	 পাট শাক ৫৪ মিলি গ্রাম	 পুই শাক ৫২ মিলি গ্রাম	 মিষ্টি আলু ৩৫ মিলি গ্রাম	 আলু ১৯ মিলি গ্রাম

\*Food Composition Table for Bangladesh

Annex 7. Food rich in Minerals ( Zinc)

ZINC RICH SPICES AND NUTS			
 Poppy seeds 9.05 mg	 Sesame seeds 7.70 mg	 Pumpkin seeds 7.21 mg	 Mustard seeds 5.87 mg
 Cashew nuts 5.78 mg		 Soybean, dried 5.70 mg	
 Coriander seed 4.58 mg	 Cumin seeds 3.89 mg	 Bay leaf 3.70 mg	 Peanut 3.18 mg

\*Food Composition Table for Bangladesh

Annex 8: Specific nutrition messages developed by the Technical/Expert Committee targeting both i) adults and ii) children during COVID-19



## করোনা ভাইরাস (কোভিড-১৯) প্রতিরোধে পুষ্টি বার্তা



ভিটামিন "সি" যেকোনো ভাইরাস প্রতিরোধে কার্যকরী ভূমিকা পালন করে। দৈনিক খাদ্য তালিকায় পর্যাপ্ত পরিমাণে ভিটামিন "সি" সমৃদ্ধ খাবার রাখুন। পেয়ারা, আমলকি, লেবু, জাম্বুরা, কমলা, মিষ্টি আলু, টমেটো, কাঁচামরিচ ইত্যাদিসহ অন্যান্য মৌসুমি ফলমূল এবং শাকসবজি (দিনে কমপক্ষে এক খরনের ফল ও দুই খরনের শাকসবজি) খান



প্রতিদিন জিংক সমৃদ্ধ খাবার : মাছ, মাংস, ডিম, দুধ, বীচি, বাদাম, ডাল এবং গম জাতীয় খাবার এবং ম্যাগনেসিয়াম সমৃদ্ধ খাবার: পালংশাক, টক দই ইত্যাদি খান



রান্নার সময় শাকসবজি বড় টুকরা করে কেটে কম তাপে ঢেকে রান্না করুন যাতে প্রয়োজনীয় পুষ্টি উপাদান বিদ্যমান থাকে। মাছ, মাংস, ডিম বেশি আঁচে সময় নিয়ে রান্না (সুসিদ্ধ) করুন। মাছ, মাংস ও সবজি কেটে আলাদা পাত্রে রাখুন। রান্নার সময় ভাতের মাড় ফেলবেন না। রান্না এবং খাওয়ার আগে ভালো করে সাবান দিয়ে হাত ধুয়ে নিন



প্রতিদিন পর্যাপ্ত পরিমাণে (কমপক্ষে ৮-১০ গ্লাস) পানি পান করুন। কুসুম গরম পানি হলে ভালো হয়। প্রক্রিয়াজাত খাবার, বোতলজাত কোমল পানীয়, কৃত্রিম জুস, অতিরিক্ত লবণ (দৈনিক ১ চা চামচের কম), চিনি ও চর্বিযুক্ত খাবার এবং ফাস্ট ফুড পরিহার করুন



নিয়মিত ব্যায়াম/শারীরিক পরিশ্রম (কমপক্ষে ৩০ মিনিট) করুন। সেই সাথে দৈনিক ৭-৮ ঘন্টা ঘুমানোর মাধ্যমে পরিপূর্ণ বিশ্রাম নিন। মানসিক চাপমুক্ত থাকুন। মানসিক চাপ রোগ প্রতিরোধ ক্ষমতা কমিয়ে দেয়। সম্ভব হলে ১৫-২০ মিনিট রোদে থাকুন

**\*করোনা ভাইরাসের লক্ষণ সমূহ দেখা দিলে অতিস্বর নিকটস্থ সরকারি স্বাস্থ্যকেন্দ্রে যোগাযোগ করুন বা হটলাইনে (১৬২৬৩, ৩৩৩) কল করুন।**





## কোভিড- ১৯ মহামারীর সময়ে শিশুর খাবার ও পুষ্টি বার্তা

### কোভিড-১৯ সংক্রমণে সম্ভাব্য/আক্রান্ত মায়েরদের স্তন্যদান বিষয়ক তথ্য

কোভিড-১৯ সংক্রমণে সম্ভাব্য/সনাক্তকৃত মায়েরা শিশুকে বুকের দুধ খাওয়াতে পারবেন। জন্মের ১ ঘণ্টার মধ্যে মায়ের দুধ দেয়া শুরু করুন এবং জন্মের ৬ মাস পর্যন্ত শুধু মায়ের দুধ খাওয়ান। এক্ষেত্রে করণীয়:

জন্মের একঘণ্টার মধ্যে শিশুকে মায়ের দুধ দিন  
জন্মের পর থেকে ছয় মাস পর্যন্ত শুধুমাত্র মায়ের দুধ দিন।  
শিশুর ৬ মাস বয়সের পর থেকে ঘরের তৈরি বাড়তি খাবারের পাশাপাশি পূর্ণ দুই বছর বয়স পর্যন্ত মায়ের দুধ খাওয়ান।

১. হাঁচি কাশি জনিত শিষ্টাচার মেনে চলুন এবং মাস্ক পরুন;
২. শিশুকে দুধ দানের আগে ও পরে এবং শিশুকে স্পর্শ করার আগে হাত ভালো করে সাবান ও পানি দিয়ে ২০ সেকন্ড ধুয়ে অথবা অ্যালকোহল যুক্ত হ্যান্ড স্যানিটাইজার দিয়ে পরিষ্কার করে নিন;
৩. যেসব স্থান কোভিড-১৯ এ আক্রান্ত মায়ের সংস্পর্শে এসেছে সেসব জায়গা বা ব্যবহৃত আসবাবপত্রের উপরিতল নিয়মিতভাবে পরিষ্কার ও জীবাণুনাশক করুন;
৪. মা যদি কোভিড-১৯ এর কারণে বেশি অসুস্থ থাকেন এবং শিশুকে নিজে থেকে দুধদানে অক্ষম হন তবে মায়ের দুধ গালানোর মাধ্যমে পরিষ্কার বাটি- চামচ ব্যবহার করে শিশুকে মায়ের দুধ দান করান;
৫. গুরুতর অসুস্থতার কারণে দুধ গালানো বা বের করা সম্ভব না হলে দাই মা বা কোনো স্তন্যদানকারী নারীকে বুঁজে বের করে দুধ পান করাতে উৎসাহিত করুন। এগুলোর কোনোটি একেবারেই সম্ভব না হলে শুধুমাত্র সেক্ষেত্রে রেজিস্টার চিকিৎসকের পরামর্শ অনুযায়ী মায়ের দুধের যথাযথ কোনো বিকল্প ব্যবহারের সম্ভাব্যতা বুঁজে বের করুন। পরবর্তীতে মা সুস্থ হয়ে ফিরলে শিশুকে পুণরায় মায়ের দুধ খাওয়ানো শুরু করুন।

আপনি যদি মা ও শিশু স্বাস্থ্যসেবার সাথে জড়িত থাকেন তবে:

- কোভিড-১৯ সংক্রমণে সনাক্তকৃত সকল গর্ভবতী নারী এবং নবজাতক ও ছোট শিশু রয়েছে এমন মায়েরদেরকে স্তন্যদান বিষয়ক পরামর্শ সেবা, মনো-সামাজিক সহায়তা এবং স্তন্যদান বিষয়ক ব্যবহারিক সহায়তা এবং শিশুকে মায়ের দুধ খাওয়ানোর পদ্ধতি শিখিয়ে দিন ;
- মা অথবা তার শিশু কোভিড-১৯ সংক্রমণে সম্ভাব্য বা সনাক্তকৃত যে অবস্থাতেই থাকুক না কেন তাদেরকে বিশেষত প্রসবের পরপরই স্তন্যদানের অভ্যাস গড়ে ওঠার সময়গুলোতে একসাথে রাখা, ডাকের সাথে ডাকের নিবিড় সংস্পর্শে রাখা, ক্যান্ডার মাডার পল্লা অফলন এবং দিন-রাত পাশাপাশি রাখা ও এর অভ্যাস গড়ে তোলার সুযোগ করে দিন ;
- কোনভাবেই মায়ের দুধের বিকল্পকে (গুড়া দুধ, তরল দুধ ) উৎসাহিত করবেন না। দুধের বোতল বা শিশুকে সান্ত্বনাকারী কোনো উপকরণ (যেমন: চুষনী) দিবেন না;
- কোভিড-১৯ নিয়ে মারাত্মক অসুস্থতা বা অন্যান্য জটিলতার কারণে কোন মা তার বাচ্চের যত্ন নিতে বা সরাসরি স্তন্যদান চালিয়ে যেতে না পারে তবে, সেসব মাকে যথাযথভাবে বুকের দুধ গালিয়ে নিয়ে নিরাপদে বাচ্চাকে খাওয়াতে উৎসাহিত করুন এবং প্রয়োজনীয় সহায়তা দিন। এক্ষেত্রে সাহায্যকারী হিসাবে একজন সুস্থ অর্থাৎ অন্য কোনো রোগে আক্রান্ত নয় এমন ব্যক্তি দায়িত্ব নিন এবং সংক্রমণ রোধে দরকারী পদক্ষেপ গ্রহণ করুন (মাস্ক পরুন মাকে স্পর্শ করার পরে হাত ভালো করে সাবান ও পানি দিয়ে ২০ সেকন্ড ধুয়ে অথবা অ্যালকোহল যুক্ত হ্যান্ড স্যানিটাইজার দিয়ে পরিষ্কার করে নিন)।