



Chapter 7.

The Ramadan Nutrition Plan (RNP) for Patients with Diabetes

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7.1 Introduction to the Ramadan Nutrition Plan

The Ramadan Nutrition Plan (RNP) is a mobile and web-based application designed to help healthcare professionals (HCPs) individualise medical nutrition therapy (MNT) for patients with diabetes during Ramadan fasting. The RNP also has a patient platform that provides education and nutrition plans for Ramadan, which may be particularly useful for people with diabetes who do not have access to HCPs. The role of MNT is vital during this period of fasting, not only in achieving optimal diabetes control but also in helping overweight and obese patients with type 2 diabetes (T2DM) improve their lifestyle and lose weight [1, 2]. In fact, Ramadan provides an ideal opportunity for patients to channel the strength and discipline required to comply with MNT; this in turn helps them to maintain optimal glycaemic control beyond the month of Ramadan.

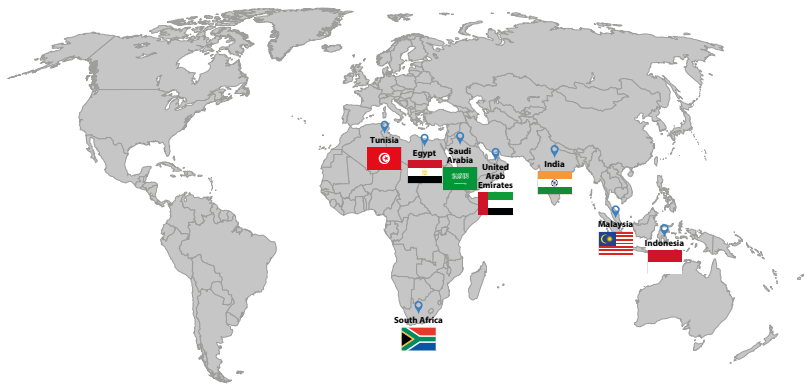
The RNP is based on the principles of optimal MNT and provides examples of meal plans for different countries and regions across the globe. However, dietary recommendations should be individualised and tailored to patients' lifestyle requirements, age, comorbidities and other medical needs [3, 4]. The RNP is a work in progress and will benefit from further contributions by HCPs of different nationalities, based on the structure provided in this chapter. This will result in the production of a comprehensive global menu resource.

The main aims of MNT during Ramadan fasting are to ensure that:

1. Patients consume an adequate amount of calories, with balanced proportions of macronutrients, during the non-fasting period (i.e. sunset to dawn) to prevent hypoglycaemia during the fasting period
2. Patients distribute their carbohydrate intake equally among meals to minimise postprandial hyperglycaemia
3. Patients and HCPs consider comorbidities such as hypertension and dyslipidaemia.

The RNP has been adopted for use in many countries (*Figure 1*). When accessing the RNP, the HCP can select their country of practice from the "Ramadan map" to gain country-specific best-practice MNT recommendations (*Figure 1*).

Figure 1. The RNP Ramadan map



Access the online version at www.daralliance.org or www.idf.org and click on your country to view a full nutrition plan. Print the plan and hand it to your patients

7.2 The pre-Ramadan patient visit

An assessment of patient nutrition, as part of a pre-Ramadan patient visit 6–8 weeks before Ramadan, provides an opportunity for HCPs to advise patients with diabetes about the necessary dietary modifications that should be adopted during Ramadan. It may also help those patients who choose to fast for a few days during the 2 months preceding Ramadan.

The main aims of a pre-Ramadan patient visit are to [5]:

1. Provide patients with a modified nutrition plan that will improve glycaemic control during Ramadan fasting
2. Provide patients with MNT that may help overweight and obese patients to successfully and safely lose weight during Ramadan
3. Adjust anti-diabetic medications in line with patients' changes in nutrition during fasting
4. Encourage proper exercise and physical activity during Ramadan
5. Provide education to help patients recognise the warning symptoms of dehydration, hypoglycaemia and other possible acute complications
6. Enforce the importance of blood glucose and body weight monitoring during Ramadan.

7.3 Risk avoidance during Ramadan

For patients with diabetes, there are several potential risks associated with prolonged fasting. It is therefore important to increase patient awareness of these and to reduce risks while, if possible, enabling patients to participate in their spiritual experience of fasting during Ramadan. Many diabetes-related risks can be minimised through proper nutrition, including [2, 6]:

1. Hypoglycaemia, especially during the late period of fasting before iftar
2. Severe hyperglycaemia after each of the main meals
3. Dehydration, especially in countries with prolonged fasting hours and hot climates
4. Significant weight gain due to increased caloric intake and reduced physical activity
5. Electrolyte imbalance
6. Acute renal failure in patients prone to severe dehydration, particularly elderly patients and those with impaired kidney function.

7.4 Health issues during Ramadan

During Ramadan, there is a dramatic change in dietary patterns for fasting Muslims compared with other months of the year. Health issues may arise due to improper eating habits and reduced physical activity [7].

Unhealthy nutrition habits that commonly develop during Ramadan include:

1. Eating particularly large meals at iftar (frequently containing more than 1500 calories), which may result in severe postprandial hyperglycaemia and weight gain
2. Eating significant amounts of highly processed carbohydrates and sugar at iftar, or between iftar and suhoor, which may also cause severe hyperglycaemia
3. Eating desserts loaded with sugar after iftar, which can lead to a prolonged period of postprandial hyperglycaemia
4. Having large and frequent snacks between the two main meals, which can contribute to longer periods of hyperglycaemia
5. Eating at a fast speed, which frequently leads to over-eating (satiety signals usually take around 30 minutes to reach the brain from the start of eating)
6. Eating suhoor early, which may result in hypoglycaemia before iftar, especially when fasting hours are longer than usual
7. Consumption of large portions of high glycaemic index (GI) carbohydrates at suhoor, which can lead to postprandial hyperglycaemia [8, 9]

8. Frying food, which is particularly unhealthy, especially when using trans-fat margarine or oils rich in saturated fat (e.g. palm oil and coconut oil)
9. Changes in physical activity and sleeping patterns can affect metabolism and may contribute to weight gain [10].

7.5 Weight maintenance and weight reduction during Ramadan

Weight gain during Ramadan should be avoided. Patients with T2DM who are overweight or obese may find that Ramadan provides a good opportunity to lose weight. Weight loss may result in a significant improvement in glycaemic control and may reduce cardiovascular risk [11, 12]. An optimal target is a modest and gradual weight reduction of 0.5–1 kg per week. In order to achieve weight loss or avoid weight gain, caloric intake should be controlled and kept within specified targets based on height and gender (**Table 1**). It is also recommended to proportionally distribute caloric intake between suhoor and iftar (**Table 2**). In the RNP app, an algorithm provides guidance for selecting appropriate caloric targets for individual patients (**Figure 2**).

Table 1. Caloric targets for men and women during Ramadan








		Weight maintenance	Weight reduction
Men		1800–2200 kcal/day	1800 kcal/day
Women >150 cm tall		1500–2000 kcal/day	1500 kcal/day
Women <150 cm tall		1500 kcal/day	1200 kcal/day

Table 2. Daily caloric intake distribution during Ramadan

	Percentage of total calories/day
Suhoor	30–40%
Iftar	40–50%
Snack between meals (one or two, if necessary)	10–20%

Figure 2. RNP caloric guide for weight reduction and weight maintenance (RNP algorithm 1)

Daily caloric intake	1200 kcal	1500 kcal	1800 kcal	2000 kcal
Effect	<p>Weight reduction for women <150 cm tall</p> 	<p>Weight maintenance for women <150 cm tall & weight reduction for women >150 cm tall</p> 	<p>Weight maintenance for women >150 cm tall & weight reduction for men</p> 	<p>Weight maintenance for women >150 cm tall & for men</p> 

7.6 The 10 principles of the RNP

Based on the goal of achieving optimal MNT during Ramadan, the principles of the RNP are defined as:

1. Consume an adequate amount of total daily calories and divide them between suhoor, iftar and if necessary, 1–2 snacks (*Tables 1 and 2*)
2. Meals should be balanced, with carbohydrates (low GI preferred) comprising around 45–50%; protein (legumes, fish, poultry or lean meat) comprising 20–30%; and fat (mono and polyunsaturated fat preferred) comprising <35% of the meal (*Table 3*). Saturated fat should be limited to <10% of the total daily caloric intake
3. Use the “Ramadan plate” method for designing meals (*Figure 3*)
4. Sugar-heavy desserts should be avoided after iftar and between meals. A moderate amount of healthy dessert is permitted, for example a piece of fruit
5. Select carbohydrates with low GI, particularly those high in fibre (preferably whole grains). Consumption of carbohydrates from vegetables (cooked and raw), whole fruits, yoghurt and dairy products is encouraged. Consumption of carbohydrates from sugar and highly processed grains (wheat flour and starches like corn, white rice and potato) should be avoided or significantly minimised
6. Maintaining adequate hydration by drinking enough water and non-sweetened beverages at or between the two main meals is important and should be encouraged (diet beverages may be consumed). Sugary drinks, canned juices or fresh juices with added sugar should be avoided. Consumption of caffeinated drinks (coffee, tea as well as cola drinks) should be minimised as they are diuretics
7. Take suhoor as late as possible, especially when fasting for >10 hours
8. Consume an adequate amount of protein and fat at suhoor as foods with higher levels of these macronutrients and lower levels of carbohydrate have a lower GI than carbohydrate-rich foods, and do not have an immediate effect on postprandial blood glucose. Protein and fat also induce satiety better than carbohydrates
9. Iftar should begin with plenty of water to overcome dehydration from fasting, and 1–2 dried or fresh dates to raise blood glucose levels

10. If needed, a snack of one piece of fruit, a handful of nuts, or vegetables may be consumed between meals. Generally, each snack should be 100–200 calories, but this may be higher depending on the individual’s caloric requirement. Some individuals may use a snack to break fasting and then eat iftar later in the evening.

Table 3. Macronutrient meal composition

Meals should be balanced. The “Ramadan plate” method is advised as a guide to designing meals (Figure 3)

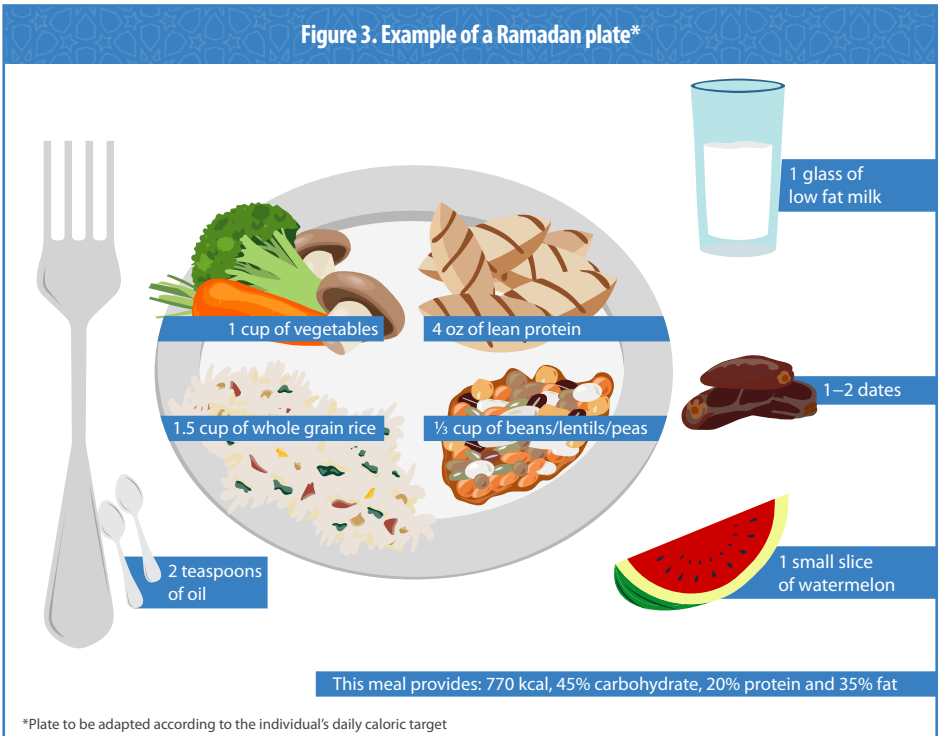
Carbohydrate	Percentage	<ul style="list-style-type: none"> The total daily intake of carbohydrate should be at least 130 g/day and ideally 45–50% of the total caloric intake Intake should be adjusted to meet the cultural setting and food preference of each individual
	Recommended	<ul style="list-style-type: none"> Carbohydrate foods with low glycaemic index and load should be selected (e.g. whole grain, legumes, temperate fruits, green salad and most vegetables) Fibre intake should be approximately 20–35 g/day (14 g/1000 kcal). This helps to provide satiety while fasting Fibre from unprocessed food, such as vegetables, fruits, seeds, nuts and legumes is preferable
	Not recommended	<ul style="list-style-type: none"> Sugar, refined carbohydrates, processed grains and starchy foods should only be consumed in limited quantities, especially sugary beverages, traditional sugar-heavy desserts, white rice, white bread, low fibre cereals and white potatoes
Protein†	Percentage	<ul style="list-style-type: none"> Protein intake should not be less than 1.2 g/kg of adjusted body weight* and usually accounts for 20–30% of total caloric intake. Protein is important as it enhances satiety. Protein also helps to maintain lean body mass [13]
	Recommended	<ul style="list-style-type: none"> Fish, skinless poultry, dairy, nuts, seeds and legumes are recommended
	Not recommended	<ul style="list-style-type: none"> Protein sources that are high in saturated fats (e.g. beef, lamb) should not be consumed in excess, as this increases the risk of cardiovascular disease
Fat	Percentage	<ul style="list-style-type: none"> Fat should comprise less than 35% of the total daily caloric intake. There is general agreement that the type of fat consumed influences cardiovascular disease risk SFA should be limited to <10% of total daily caloric intake. PUFA and MUFA should comprise the rest of the daily fat caloric allowance
	Recommended	<ul style="list-style-type: none"> PUFA and MUFA (e.g. olive oil, vegetable oil or blended oil [PUFA and palm oil]) are recommended. Oily fish (e.g. tuna, sardines, salmon) are recommended as a source of omega-3 fatty acids
	Not recommended	<ul style="list-style-type: none"> Foods high in saturated fat, including red and processed meats (beef, lamb, hot dog, salami, luncheon meat), and ghee, and foods high in trans-fats (fast food, cookies, margarines and butter made of partially-hydrogenated oil) are not recommended

MUFA, monounsaturated fatty acids; PUFA, polyunsaturated fatty acids; SFA, saturated fatty acids

*Adjusted body weight = Ideal body weight (IBW) + (0.25 x [Current weight – IBW])

†Patients with renal issues may have different protein requirements and should receive individualised advice

Figure 3. Example of a Ramadan plate*



7.7 The RNP: a transcultural application


In the RNP, a second algorithm and a toolkit provide meal plans for the four caloric targets (1200, 1500, 1800 and 2000 kcal/day). These are available online within the RNP app in order to support the nutrition needs of patients with diabetes during Ramadan. Meal plans have been tailored for different countries, providing a transcultural user experience. Examples for Egypt, Malaysia and South Africa are shown at the end of this chapter. The RNP is a work in progress and HCPs of different nationalities are encouraged to contribute menus to the RNP at www.daralliance.org. Healthy menus, based on the structure provided in this chapter, can be submitted online for review and, if accepted, will subsequently be posted on the RNP platform.


Summary

- The RNP is a mobile and web-based application designed to help HCPs individualise and implement MNT for patients with diabetes during Ramadan. It also helps patients without access to HCPs to construct a healthy eating plan for Ramadan.
- The RNP helps patients with diabetes to plan a daily caloric target that may help them to maintain body weight if they are lean, or to lose weight if they are overweight or obese.
- Use of the RNP may help patients with diabetes to avoid risks during Ramadan fasting, such as hypoglycaemia, hyperglycaemia and dehydration.
- The RNP provides examples of meal plans within the target caloric levels, tailored for use in different countries.
- The RNP website is designed to capture menus from across the globe, that match the structure provided in this chapter.

References

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Ramadan nutrition plan (Algorithm 2)			 Tool kit Ramadan nutrition application for Egypt			
Target daily calories	Macronutrient composition	Caloric distribution	1200 kcal/day	1500 kcal/day	1800 kcal/day	2000 kcal/day
1200 kcal <i>Weight reduction for women <150 cm tall</i>	<ul style="list-style-type: none"> • CHO: 45–50% Recommended: low GI, low GL, whole grain and high fibre • Protein: 20–30% Recommended: fish, skinless poultry, dairy, nuts, seeds and legumes • Fat: <35% Recommended: SFA <10%, choose low-fat cooking methods e.g. grill, bake and steam 	Suhoor 30–40%	300–400 kcal <ul style="list-style-type: none"> • Beans (Foul), Fat: 0.3 cup • Yoghurt: 1 tub • Cheese: 1 oz/1 slice • Small olives: 5 • Wholegrain bread: 1 thin slice • Tomato & cucumber salad, with 1 egg • Water/unsweetened drinks (430 kcal, CHO exchange = 3)[†] 	450–600 kcal <ul style="list-style-type: none"> • Beans (Foul), Fat: 1 cup • Yoghurt: 1 tub • Cheese: 1 oz/1 slice • Small olives: 5 • Wholegrain bread: 1 thin slice • Tomato & cucumber salad, with 1 egg • Water/unsweetened drinks (500 kcal, CHO exchange = 3.5) 	540–720 kcal <ul style="list-style-type: none"> • Beans (Foul), Fat: 1.5 cups • Yoghurt: 1 tub • Cheese: 2 oz/2 slices • Small olives: 5 • Wholegrain bread: 2 thin slices • Tomato & cucumber salad, with 1 egg • Water/unsweetened drinks (670 kcal, CHO exchange = 5) 	600–800 kcal <ul style="list-style-type: none"> • Beans (Foul), Fat: 1.5 cups • Yoghurt: 1.5 tubs • Cheese: 2 oz/2 slices • Small olives: 10 • Wholegrain bread: 2 thin slices • Tomato & cucumber salad, with 1 egg • Water/unsweetened drinks (765 kcal, CHO exchange = 5.5)
			1500 kcal <i>Weight maintenance for women <150 cm tall and weight reduction for women >150 cm tall</i>	Lifestyle recommendations <ul style="list-style-type: none"> • Begin iftar with plenty of water to overcome dehydration from fasting • Keep physically active • Do not sleep for longer than usual 	Snack 1[†] 10–20%	120–240 kcal <ul style="list-style-type: none"> • Dates: 1–2[†] • Water/unsweetened drinks (60 kcal, CHO exchange = 1)
1800 kcal <i>Weight maintenance for women >150 cm tall and weight reduction for men</i>	Snack 2 10–20%	480–600 kcal <ul style="list-style-type: none"> • Dates: 1–2[†] • Salad (tomatoes, cucumber & greens with lemon/vinegar dressing): 1 medium bowl • Soup (grilled or broiled chicken/ lentil/meat): 4 oz • Cooked vegetables: 1 cup • Rice (preferably wholegrain): 1 cup • Whole fruit: 1 small piece • Water/unsweetened drinks (600 kcal, CHO exchange = 4) 	600–750 kcal <ul style="list-style-type: none"> • Dates: 1–2; Fruit: 1 whole piece • Salad (tomatoes, cucumber & greens with lemon/vinegar dressing): 1 medium bowl • Soup (grilled or broiled chicken/ lentil/meat): 4 oz • Cooked vegetables: 1 cup • Rice (preferably wholegrain): 1 cup • Dessert: 1 small piece • Water/unsweetened drinks (700 kcal, CHO exchange = 5) 			720–900 kcal <ul style="list-style-type: none"> • Dates: 1–2; Fruit: 1 whole piece • Salad (tomatoes, cucumber & greens with lemon/vinegar dressing or olive oil dressing): 2 tsp; 1 medium bowl • Soup (grilled or broiled chicken/ lentil/meat): 4 oz • Cooked vegetables: 1.5 cups • Rice (preferably wholegrain): 1.5 cups • Dessert: 1 small piece • Water/unsweetened drinks (900 kcal, CHO exchange = 6)
2000 kcal <i>Weight maintenance for women >150 cm tall and for men</i>		Snack 2 10–20%	120–240 kcal <ul style="list-style-type: none"> • Walnuts: 1 handful/GISN: 3 tbsp • Water/unsweetened drinks (175 kcal, CHO exchange = 1) 	150–300 kcal <ul style="list-style-type: none"> • Walnuts: 1 handful/GISN: 6 tbsp • Water/unsweetened drinks (285 kcal, CHO exchange = 2) 	180–360 kcal <ul style="list-style-type: none"> • Walnuts: 1 handful • Milk: 1 glass/GISN: 6 tbsp • Water/unsweetened drinks (340 kcal, CHO exchange = 2) 	200–400 kcal <ul style="list-style-type: none"> • Walnuts: 1 handful • Milk: 1 glass/GISN: 6 tbsp • Water/unsweetened drinks (340 kcal, CHO exchange = 2)

Ramadan nutrition plan (Algorithm 2)			 Tool kit Ramadan nutrition application for Malaysia			
Target daily calories	Macronutrient composition	Caloric distribution	1200 kcal/day	1500 kcal/day	1800 kcal/day	2000 kcal/day
1200 kcal <i>Weight reduction for women <150 cm tall</i>	<ul style="list-style-type: none"> • CHO: 45–50% Recommended: low GI, low GL, whole grain and high fibre • Protein: 20–30% Recommended: fish, skinless poultry, dairy, nuts, seeds and legumes • Fat: <35% Recommended: SFA <10%, choose low-fat cooking methods e.g. grill, bake and steam 	Suhoor 30–40%	300–400 kcal <ul style="list-style-type: none"> • Green salads/dalams: 1 cup • Stir-fried beans with egg: 0.5 cup • Wholegrain bread: 2 slices/ wholegrain rice: 1 cup (2 scoops) • Milk: 1 glass, with oats: 3 tbsp (or GISN: 6 tbsp)/unsweetened malted drink: 3 tbsp with milk • Water/unsweetened drinks (489 kcal, CHO exchange = 4.5)[†] 	450–600 kcal <ul style="list-style-type: none"> • Green salads/dalams: 1 cup • Stir-fried beans with egg: 0.5 cup • Baked fish in sambal: 0.5 palm size • Wholegrain bread: 2 slices/ wholegrain rice: 1 cup (2 scoops) • Milk: 1 glass, with oats: 3 tbsp (or GISN: 6 tbsp)/unsweetened malted drink: 3 tbsp with milk • Water/unsweetened drinks (530 kcal, CHO exchange = 4.5) 	540–720 kcal <ul style="list-style-type: none"> • Green salads/dalams: 1 cup • Stir-fried beans with egg: 1 cup • Baked fish in sambal: 1 palm size • Wholegrain bread: 2 slices/ wholegrain rice: 1 cup (2 scoops) • Milk: 1 glass, with oats: 3 tbsp (or GISN: 6 tbsp)/unsweetened malted drink: 3 tbsp with milk • Water/unsweetened drinks (650 kcal, CHO exchange = 5) 	600–800 kcal <ul style="list-style-type: none"> • Dates: 1–2 • Green salads/dalams: 1 cup • Stir-fried beans with egg: 1 cup • Baked fish in sambal: 1 palm size • Wholegrain bread: 2 slices/ wholegrain rice: 1 cup (2 scoops) • Milk: 1 glass, with oats: 3 tbsp (or GISN: 6 tbsp)/unsweetened malted drink: 3 tbsp with milk • Water/unsweetened drinks (790 kcal, CHO exchange = 6)
			1500 kcal <i>Weight maintenance for women <150 cm tall and weight reduction for women >150 cm tall</i>	Lifestyle recommendations <ul style="list-style-type: none"> • Begin iftar with plenty of water to overcome dehydration from fasting • Keep physically active • Do not sleep for longer than usual 	Snack 1[†] 10–20%	120–240 kcal <ul style="list-style-type: none"> • Dates: 1–2[†] • Baked chicken curry puff: 1 piece (medium size)/popiah/basah: 1 piece/ paku ayam: 1 piece • Water/unsweetened drinks (175 kcal, CHO exchange = 2)
1800 kcal <i>Weight maintenance for women >150 cm tall and weight reduction for men</i>	Snack 2 10–20%	480–600 kcal <ul style="list-style-type: none"> • Dates: 1–2[†] • Green salads/dalams: 1 cup • Tempeh with anchovies: 1 cup • Lean grilled chicken in sambal: 1 palm size • Rice (preferably wholegrain/ parboiled basmati): 1 cup • Water/unsweetened drinks (525 kcal, CHO exchange = 3) 	600–750 kcal <ul style="list-style-type: none"> • Dates: 1–2; Fruit: 1 whole piece • Green salads/dalams: 1 cup • Tempeh with anchovies: 1 cup • Lean grilled chicken in sambal: 1 palm size • Low-fat soup with lean meat (1 matchbox) and vegetables: 1 small bowl • Rice (preferably wholegrain/ parboiled basmati): 1 cup • Water/unsweetened drinks (675 kcal, CHO exchange = 4) 			720–900 kcal <ul style="list-style-type: none"> • Dates: 1–2; Fruit: 1 whole piece • Green salads/dalams: 1 cup; olive oil: 1 tsp • Tempeh with anchovies: 1 cup • Lean grilled chicken in sambal: 1 palm size • Low-fat soup with lean meat (3 matchboxes) and vegetables: 1.5 small bowls • Rice (preferably wholegrain/ parboiled basmati): 1.5 cups • Water/unsweetened drinks (750 kcal, CHO exchange = 4.5)
2000 kcal <i>Weight maintenance for women >150 cm tall and for men</i>		Snack 2 10–20%	120–240 kcal <ul style="list-style-type: none"> • Milk: 1 glass/GISN: 3 tbsp • Water/unsweetened drinks (125 kcal, CHO exchange = 1) OR • Wholegrain bread: 1 slice, with sardines and vegetables: 3 tbsp • Water/unsweetened drinks (160 kcal, CHO exchange = 1) 	150–300 kcal <ul style="list-style-type: none"> • Milk: 1 glass, with oats: 3 tbsp (or GISN: 6 tbsp) • Water/unsweetened drinks (225 kcal, CHO exchange = 2) OR • Wholegrain bread: 2 slices, with green vegetables • Water/unsweetened drinks (275 kcal, CHO exchange = 2) 	180–360 kcal <ul style="list-style-type: none"> • Milk: 1 glass, with oats: 3 tbsp (or GISN: 6 tbsp) • Water/unsweetened drinks (225 kcal, CHO exchange = 2) OR • Noodle soup with meat: 1 small bowl, with green vegetables • Water/unsweetened drinks (350 kcal, CHO exchange = 3) 	200–400 kcal <ul style="list-style-type: none"> • Milk: 1 glass, with oats: 3 tbsp (or GISN: 6 tbsp) • Water/unsweetened drinks (225 kcal, CHO exchange = 2) OR • Noodle soup with meat: 1 small bowl, with green vegetables • Water/unsweetened drinks (350 kcal, CHO exchange = 3)

[†]If dates are consumed during snack 1, no dates should be consumed during iftar. [†]One CHO exchange = 15 g CHO. [†]Increased consumption of green salad and vegetables is encouraged up to 3 cups daily; starchy vegetables should be measured (1 small potato = 1 exchange of CHO)

CHO, carbohydrate; GI, glycaemic index; GL, glycaemic load; GISN, glycaemia-targeted specialised nutrition; SFA, saturated fatty acids; tbsp, tablespoon

Ramadan nutrition plan (Algorithm 2)			 Tool kit Ramadan nutrition application for South Africa			
Target daily calories	Macronutrient composition	Caloric distribution	1200 kcal/day	1500 kcal/day	1800 kcal/day	2000 kcal/day
1200 kcal <i>Weight reduction for women <150 cm tall</i>	<ul style="list-style-type: none"> • CHO: 45–50% Recommended: low GI, low GL, whole grain and high fibre • Protein: 20–30% Recommended: fish, skinless poultry, dairy, nuts, seeds and legumes • Fat: <35% Recommended: SFA <10%, choose low-fat cooking methods e.g. grill, bake and steam 	Subhoor 30–40%	300–400 kcal <ul style="list-style-type: none"> • Wholegrain bread: 1 slice, with egg: 1 large • Milk: 4 tbsp, with oats: 3 tbsp, and almonds: 0.5 handful • Apple: 1 small • Water/unsweetened drinks (400 kcal, CHO exchange = 3)¹ 	450–600 kcal <ul style="list-style-type: none"> • Wholegrain bread: 2 slices, with egg: 1 large • Milk: 4 tbsp, with oats: 3 tbsp, and almonds: 0.5 handful • Apple: 1 small • Water/unsweetened drinks (475 kcal, CHO exchange = 4) 	540–720 kcal <ul style="list-style-type: none"> • Wholegrain bread: 2 slices, with egg: 1 large • Milk: 4 tbsp, with oats: 3 tbsp, and almonds: 1 handful • Yoghurt: 0.5 tub • Apple: 1 small • Water/unsweetened drinks (555 kcal, CHO exchange = 4.5) 	600–800 kcal <ul style="list-style-type: none"> • Wholegrain bread: 2 slices, with egg: 1 large • Milk: 4 tbsp, with oats: 6 tbsp, and almonds: 1 handful • Apple: 1 small • Water/unsweetened drinks (640 kcal, CHO exchange = 5.5)
		Snack 1 10–20%	120–240 kcal <ul style="list-style-type: none"> • Dates: 1–2² • Badam milk (milk, ground almonds: 0.5 handful and cardamom powder): 1 glass (210 kcal, CHO exchange = 2) 	150–300 kcal <ul style="list-style-type: none"> • Dates: 1–2 • Badam milk (milk, ground almonds: 0.5 handful and cardamom powder): 1 glass (210 kcal, CHO exchange = 2) 	180–360 kcal <ul style="list-style-type: none"> • Dates: 1–2 • Badam milk (milk, ground almonds: 0.5 handful and cardamom powder): 1 glass (210 kcal, CHO exchange = 2) 	200–400 kcal <ul style="list-style-type: none"> • Dates: 1–2 • Badam milk (milk, ground almonds: 0.5 handful and cardamom powder): 1 glass (210 kcal, CHO exchange = 2)
1500 kcal <i>Weight maintenance for women <150 cm tall and weight reduction for women >150 cm tall</i>	Lifestyle recommendations <ul style="list-style-type: none"> • Begin iftar with plenty of water to overcome dehydration from fasting • Keep physically active • Do not sleep for longer than usual 	Snack 2 10–20%	480–600 kcal <ul style="list-style-type: none"> • Dates: 1–2² • Baked mince samosas: 2–3 cocktail • Haleem (wheat, oats and meat broth): 0.5 cup • Basmati/parboiled rice: 0.5 cup/ roti: 1 small • Grilled or curried lean chicken/fish: 4 oz • Green salad/vegetables¹ • Water/unsweetened drinks (490 kcal, CHO exchange = 3) 	600–750 kcal <ul style="list-style-type: none"> • Dates: 1–2 • Baked mince samosas: 2–3 cocktail • Haleem (wheat, oats and meat broth): 1 cup • Basmati/parboiled rice: 0.5 cup/ roti: 1 small • Grilled or curried lean chicken/fish: 4 oz • Green salad/vegetables • Water/unsweetened drinks (635 kcal, CHO exchange = 4) 	720–900 kcal <ul style="list-style-type: none"> • Dates: 1–2 • Baked mince samosas: 2–3 cocktail • Haleem (wheat, oats and meat broth): 1 cup • Basmati/parboiled rice: 1 cup/ roti: 2 small • Grilled or curried lean chicken/fish: 4 oz • Green salad/vegetables • Water/unsweetened drinks (710 kcal, CHO exchange = 5) 	800–1000 kcal <ul style="list-style-type: none"> • Dates: 1–2 • Baked mince samosas: 2–3 cocktail • Haleem (wheat, oats and meat broth): 1.5 cups • Basmati/parboiled rice: 1 cup/ roti: 2 small • Grilled or curried lean chicken/fish: 4 oz • Green salad/vegetables • Fruit: 1 whole piece • Water/unsweetened drinks (850 kcal, CHO exchange = 6)
1800 kcal <i>Weight maintenance for women >150 cm tall & weight reduction for men</i>		Snack 1 10–20%	120–240 kcal <ul style="list-style-type: none"> • Unsweetened fruit in fruit juice: 0.5 cup • Water/unsweetened drinks (120 kcal, CHO exchange = 1) 	150–300 kcal <ul style="list-style-type: none"> • Milk-based dessert with sweetener (ghimi/falooda/ras malai): 0.5 cup • Water/unsweetened drinks OR <ul style="list-style-type: none"> • Unsweetened fruit in fruit juice: 1 cup, and custard with sweetener: 0.5 cup • Water/unsweetened drinks (160 kcal, CHO exchange = 1.5) 	180–360 kcal <ul style="list-style-type: none"> • Milk-based dessert with sweetener (ghimi/falooda/ras malai): 1 cup • Water/unsweetened drinks OR <ul style="list-style-type: none"> • Unsweetened fruit in fruit juice: 1 cup, and custard with sweetener: 0.5 cup • Water/unsweetened drinks (235 kcal, CHO exchange = 2.5) 	200–400 kcal <ul style="list-style-type: none"> • Milk-based dessert with sweetener (ghimi/falooda/ras malai): 1 cup • Water/unsweetened drinks OR <ul style="list-style-type: none"> • Unsweetened fruit in fruit juice: 1 cup, and custard with sweetener: 0.5 cup • Water/unsweetened drinks (235 kcal, CHO exchange = 2.5)
2000 kcal <i>Weight maintenance for women >150 cm tall & for men</i>		Snack 2 10–20%	120–240 kcal <ul style="list-style-type: none"> • Unsweetened fruit in fruit juice: 0.5 cup • Water/unsweetened drinks (120 kcal, CHO exchange = 1) 	150–300 kcal <ul style="list-style-type: none"> • Milk-based dessert with sweetener (ghimi/falooda/ras malai): 0.5 cup • Water/unsweetened drinks OR <ul style="list-style-type: none"> • Unsweetened fruit in fruit juice: 1 cup, and custard with sweetener: 0.5 cup • Water/unsweetened drinks (160 kcal, CHO exchange = 1.5) 	180–360 kcal <ul style="list-style-type: none"> • Milk-based dessert with sweetener (ghimi/falooda/ras malai): 1 cup • Water/unsweetened drinks OR <ul style="list-style-type: none"> • Unsweetened fruit in fruit juice: 1 cup, and custard with sweetener: 0.5 cup • Water/unsweetened drinks (235 kcal, CHO exchange = 2.5) 	200–400 kcal <ul style="list-style-type: none"> • Milk-based dessert with sweetener (ghimi/falooda/ras malai): 1 cup • Water/unsweetened drinks OR <ul style="list-style-type: none"> • Unsweetened fruit in fruit juice: 1 cup, and custard with sweetener: 0.5 cup • Water/unsweetened drinks (235 kcal, CHO exchange = 2.5)

¹If dates are consumed during snack 1, no dates should be consumed during iftar. ²One CHO exchange = 15 g CHO. ³Increased consumption of green salad and vegetables is encouraged up to 3 cups daily; starchy vegetables should be measured (1 small potato = 1 exchange of CHO)

CHO, carbohydrate; GI, glycaemic index; GL, glycaemic load; GTSN, glycaemia-targeted specialised nutrition; SFA, saturated fatty acids; tbsp, tablespoon