

# Ramadan Nutrition Plan for Diabetes

Barakatun-Nisak Mohd Yusof Ph.D

Associate Professor

Universiti Putra Malaysia

[bnisak@upm.edu.my](mailto:bnisak@upm.edu.my)



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# Agenda

- Rationale for the structured Ramadan Nutrition Plan (RNP)
- Diabetes Nutrition
  - Fundamental Aspects
  - Further optimization
- The RNP – our experience





# Effects of **Malaysian** **Diabetes** **Ramadan Nutrition Plan** **(My Dia-RNP)**

*on behalf of My Dia-RNP  
study team*

# The Rationale



## Diabetes and Ramadan: Practical Guidelines

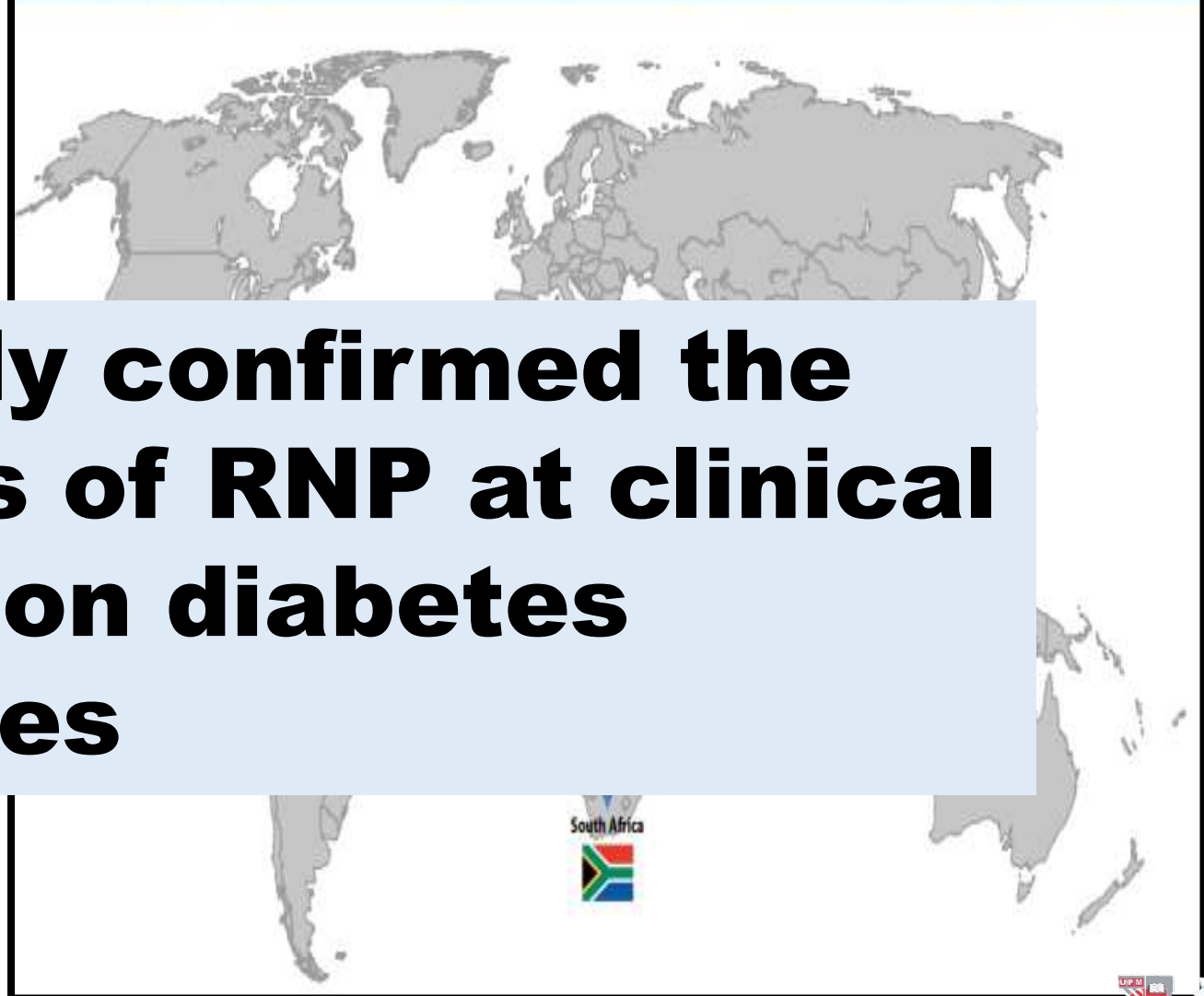
International Diabetes Federation (IDF), in collaboration  
with the Diabetes and Ramadan (DAR) International Alliance

April 2016



**No study confirmed the  
benefits of RNP at clinical  
setting on diabetes  
outcomes**

Figure 1. The RNP Ramadan map



# 2

## Ramadan Nutrition practices are not optimal



13.4% skipped sahur



79% increased consumption of sweetened food/drinks



52% had early Sahur (before 4am)



73% Reduced physical activity

**Only 26% received specified Ramadan education**

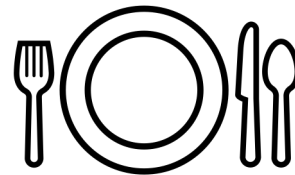
# The Basis of RNP principles

## Diabetes Nutrition

Fundamental Aspects  
(Key strategies)



Further Optimization  
(Treat-to-target)



**Structured Ramadan  
Nutrition Plan**

# Diabetes Nutrition

## Fundamental Aspects (Key strategies)



### Carbs Management

Total

Type

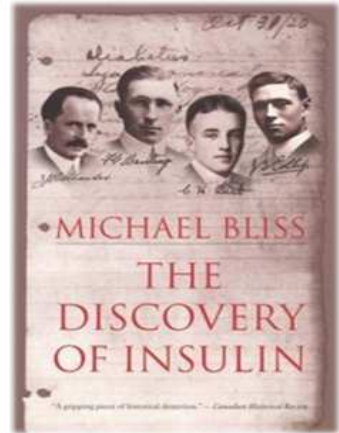
Timing

### Carbs in Diabetes

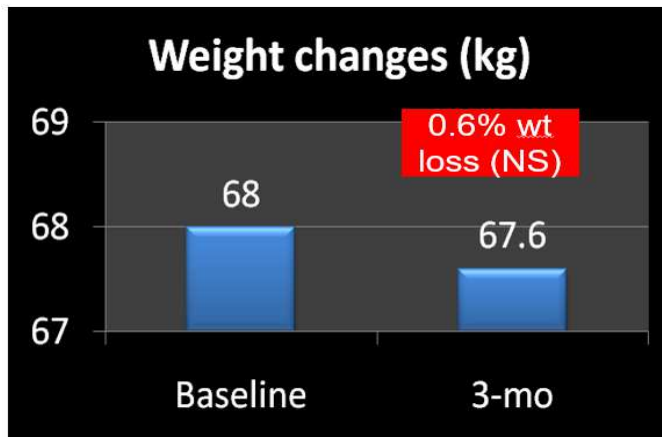
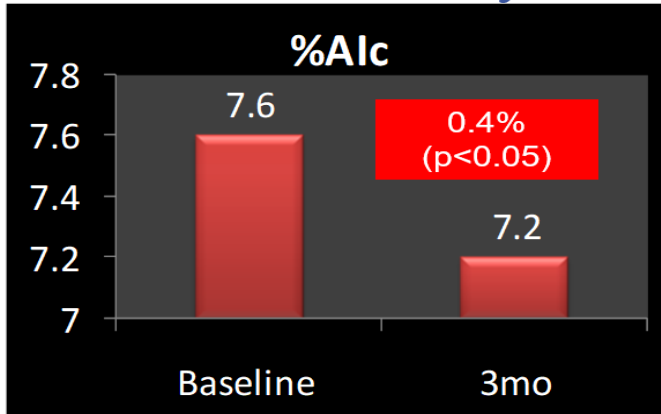
- The component of the diet that has the greatest influence on blood glucose

### **CARBOHYDRATE**

- \* (85-94% variability of mean glc and insulin responses)



Effect of modifying the Carbs intake  
– a 3 months study



Barakatun Nisak MY 2013 MJM

# Best-practices to deliver carbs management

## 01 TOTAL

Controlling the Portion  
Size of Carbs



- 0.4% HbA<sub>1c</sub>  
reduction

## 02 TYPE

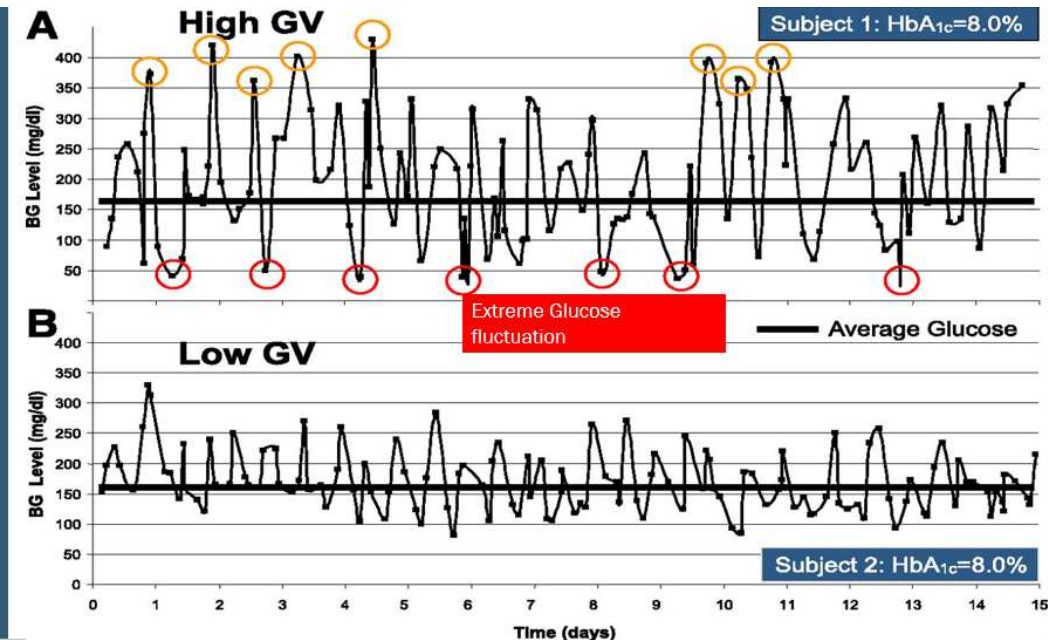
Beautify the plate



Additional  
-0.2 to 0.3%  
HbA<sub>1c</sub> reduction

## 03 TIMING

Consistent carbs intake  
day-to-day basis



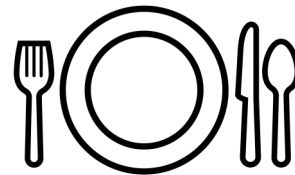
# The Basis of RNP principles

## Diabetes Nutrition

Fundamental Aspects  
(Key strategies)



Further Optimization  
(Treat-to-target)



**Structured Ramadan  
Nutrition Plan**

# Diabetes Nutrition

Eat VG first

Further Optimization  
(Treat-to-target)

Diabetes-Specific  
Formula

Format: Abstract

Send to

Asia Pac J Clin Nutr. 2011;20(2):161-8.

A simple meal plan of 'eating vegetables before carbohydrate' was more effective for achieving glycemic control than an exchange-based meal plan in Japanese patients with type 2 diabetes.

Imai S<sup>1</sup>, Matsuda M, Hasegawa G, Fukui M, Obayashi H, Ozasa N, Kajiyama S.

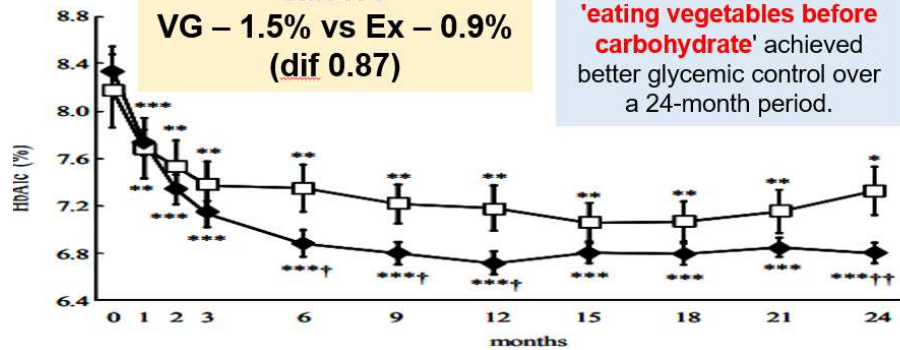
Author information



HbA1c

VG – 1.5% vs Ex – 0.9%  
(dif 0.87)

A simple meal plan of 'eating vegetables before carbohydrate' achieved better glycemic control over a 24-month period.



to compliment portion control of carbs  
→ Satiety



Nutritional Status of People with T2DM:  
The Unmet Needs

Country	Fasting	Postprandial
Singapore	7.6	7.5
Bangladesh	8.4	8.6
Taiwan	8.0	10.6
Thailand	7.9	11.0
Indonesia	7.9	11.6
Malaysia	8.0	12.7

IDF Diabetes Atlas 2015



60% did not exercise and spent 5.4 + 3.0 hrs/day in sedentary activities



Only 20% adhered to dietary recommendations



Excessed intake of carbs (rice-based), and calories but lack of fibre



3

Role of DSF in Ramadan remains unclear

Structured nutrition with Diabetes Specific Formula

- improved overall glycemic control and body weight in people with T2DM<sup>1,2,3</sup>
- Non-Ramadan fasting period

1. Motalleb, Adham, et al. "Effects of nutrition therapy on HbA1c and cardiovascular disease risk factors in overweight and obese patients with type 2 diabetes." *Nutrition journal* 17.1 (2018): 42.  
2. Chee, Winnie SS, et al. "Structured lifestyle intervention based on a trans-cultural diabetes-specific nutrition algorithm (TDNA) in individuals with type 2 diabetes: a randomized controlled trial." *BMI Open Diabetes Research and Care* 5.1 (2017): e000384.  
3. Sew and Barakatun-Nisak MY 2018 (under review)

Particularly important



# Common Sahur's Meal

- Lack of nutrient
- Risk of hypoglycemia, hyperglycemia and dehydration

# My Dia-RNP

**Ramadan-focused  
nutrition therapy**



**Diabetes-specific  
formula**

## Primary Objective

To determine the effects of **structured Ramadan Nutrition Plan** vs **Usual Care** on clinical outcomes in patients with T2D during Ramadan fasting.

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# Methodology

## Recruitment

Enrollment (n= 64)

An 8-week, parallel-group, non-randomized study conducted between April 2019 and July 2019 considered patients' preference for the allocation to a study arm.

63%

sRNP  
(n=41)



n= 38  
(93%)

Choice of treatment

Baseline

End

36%

UC  
(n=23)



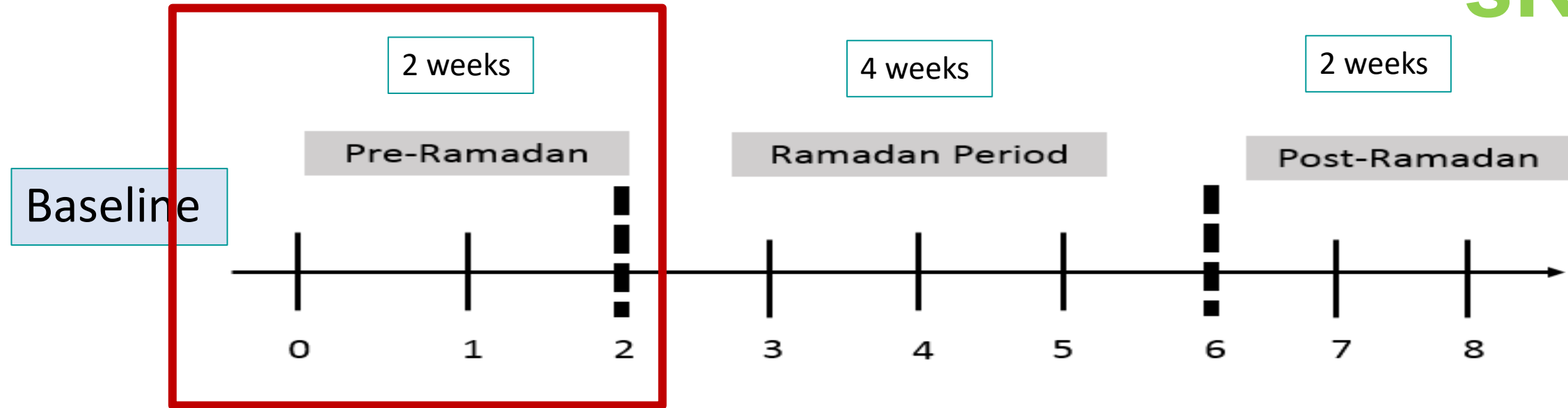
n=22  
(96%)

Ramadan is time-sensitive-  
patients' preferences -  
optimize dietary adherence.

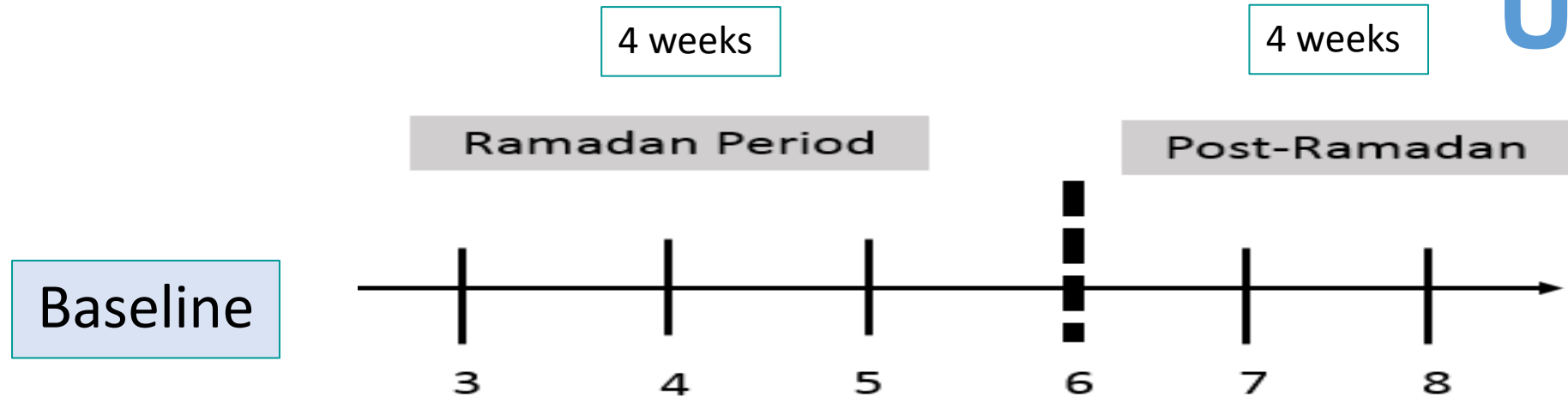
Mimics routine practices

# Pre-Ramadan nutrition plan

sRNP



UC



## Study Procedures

# Characteristic of the participants at baseline

	sRNP (n=38)	UC (n=22)
	Mean	Mean
<b>Age (years)</b>	48.1 ± 9.7	48.4 ± 9.9
<b>% Male</b>	42%	59%
<b>Diabetes duration (years)</b>	5.9 ± 4.4	3.8 ± 3.5
<b>Family history (%)</b>	92%	86%
<b>Number of OADs</b>	1.5 ± 0.6	1.3 ± 0.7
<b>BMI (kg/m<sup>2</sup>)</b>	31.2 ± 5.7	29.0 ± 4.6
<b>HbA1c (%)</b>	7.9 ± 1.5	7.8 ± 1.3

*1. comparable at baseline*

2. Age 50s'

sRNP – more males, longer duration, high % fxhx, slightly heavier

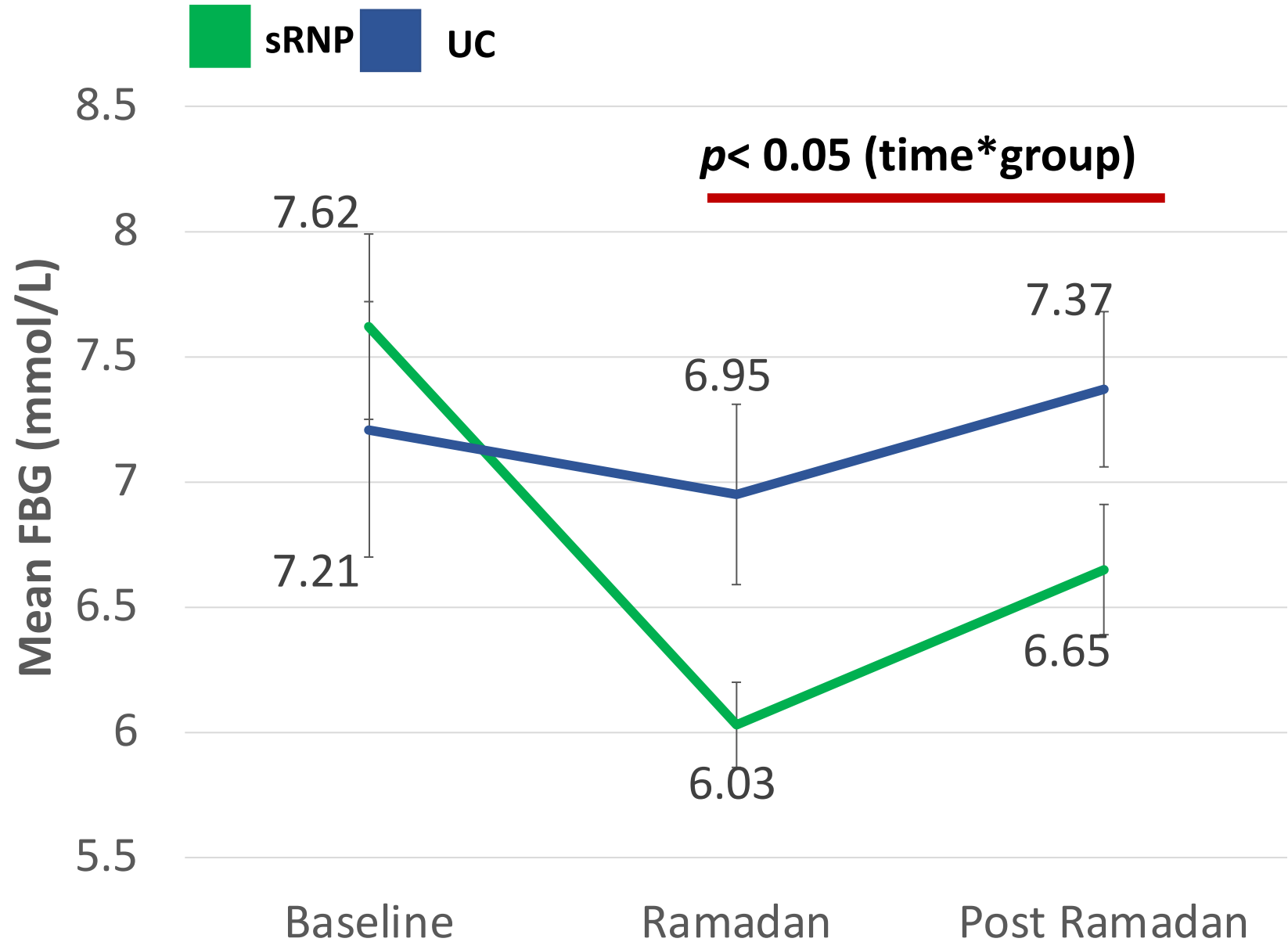


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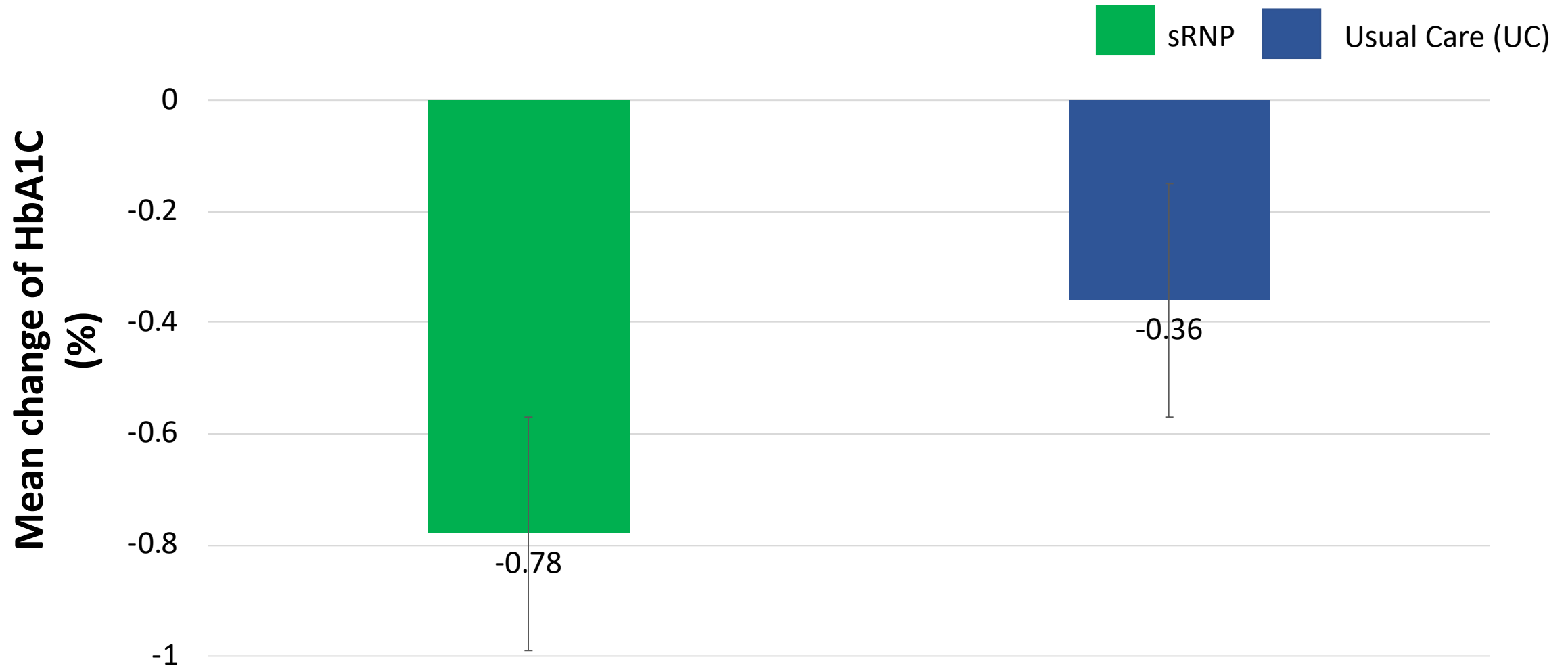
# Key findings



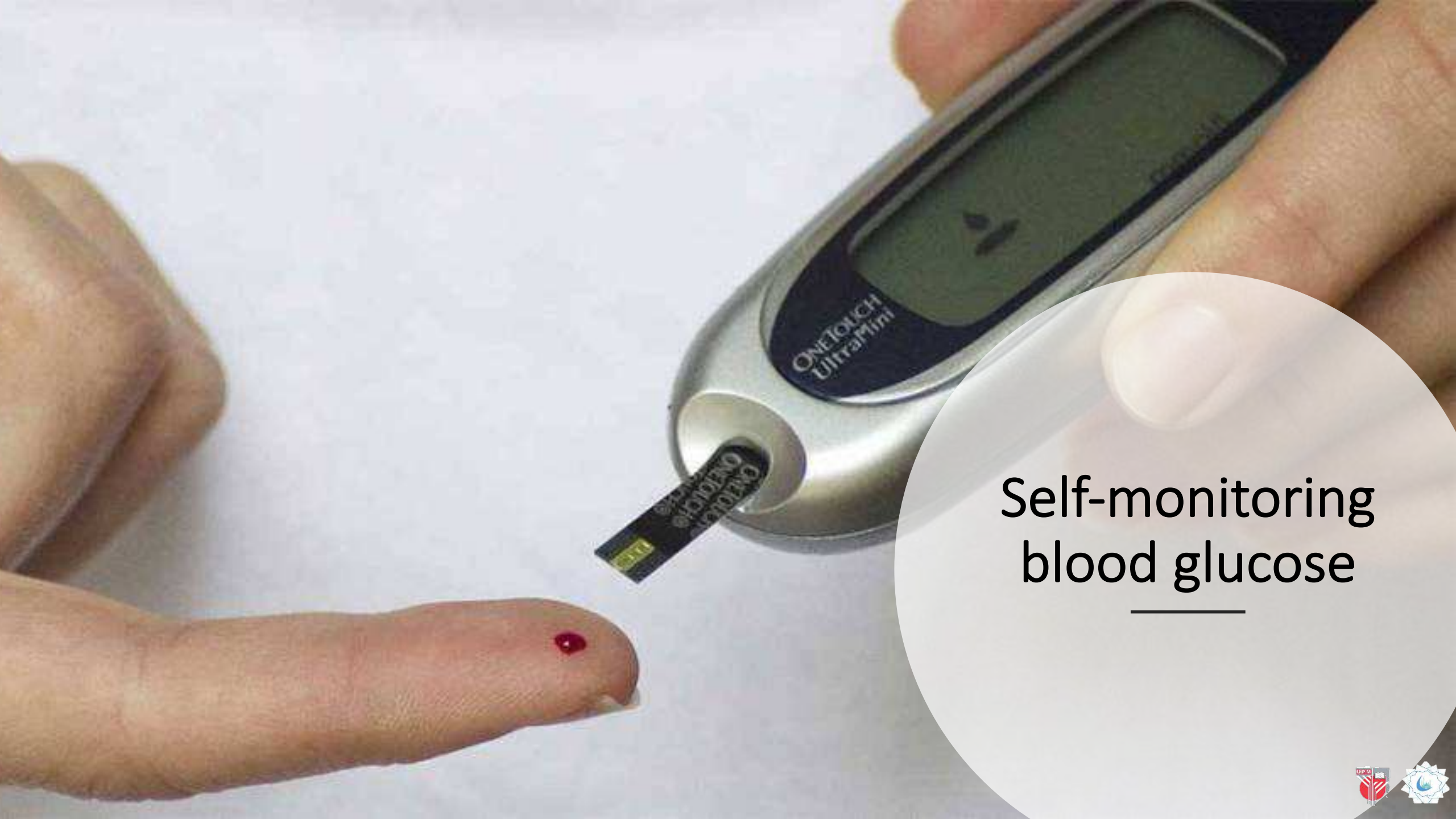
# Fasting blood glucose (mmol/L $\pm$ S.E)



# Changes in HbA1c (% $\pm$ SD)

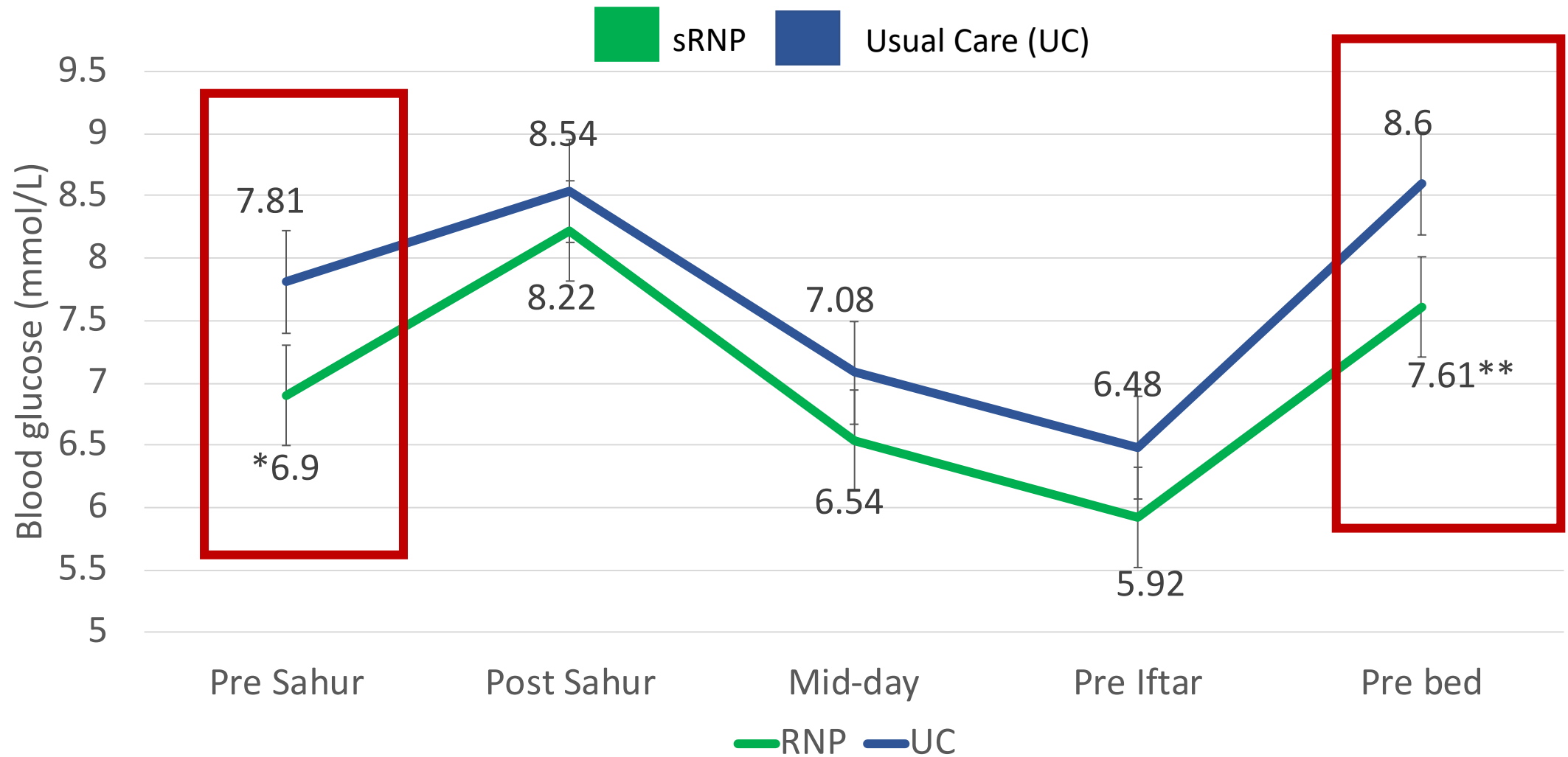


sRNP - Significant changes within a group ( $p < 0.05$ )



Self-monitoring  
blood glucose

# SMBG throughout Ramadan between RNP and UC

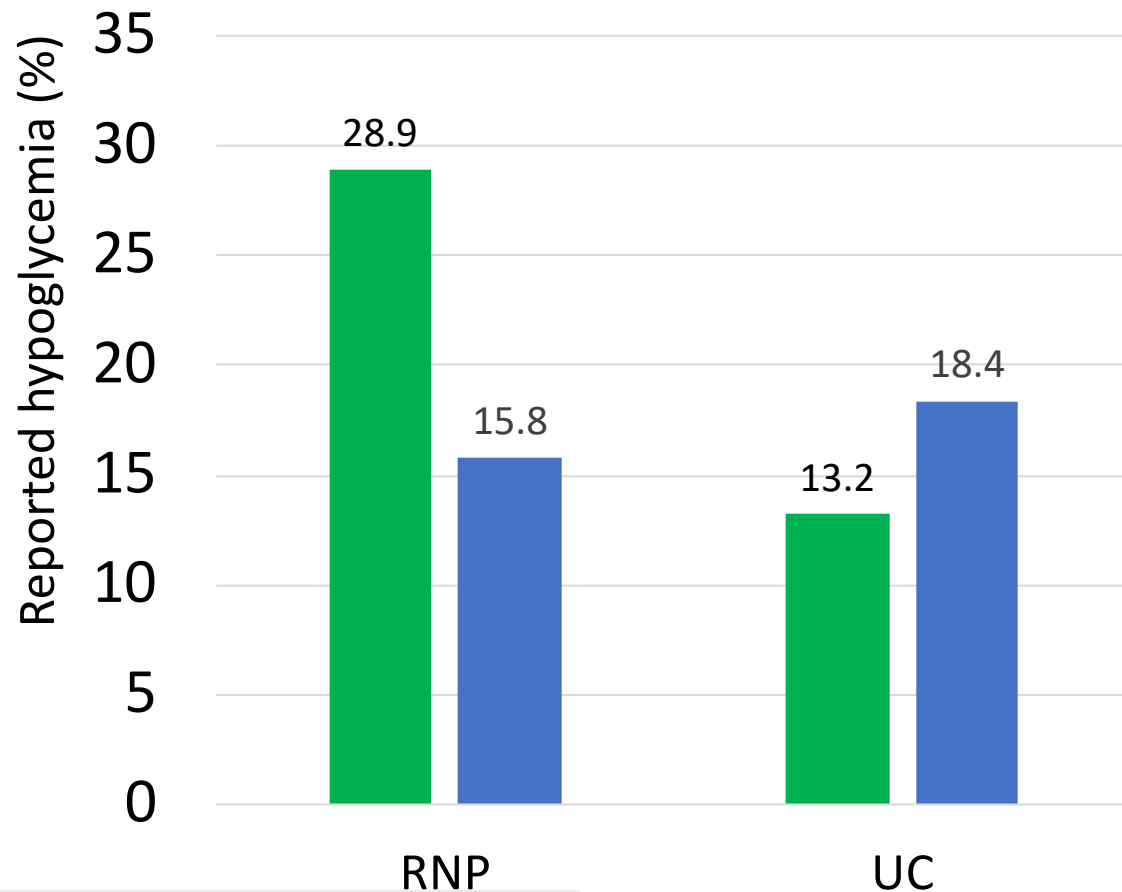


Significant different between group ( $p < 0.05^*$ ,  $0.01^{**}$ )

# Reported hypoglycemia (%)

■ sRNP ■ Usual Care (UC)

Ramadan Post-Ramadan

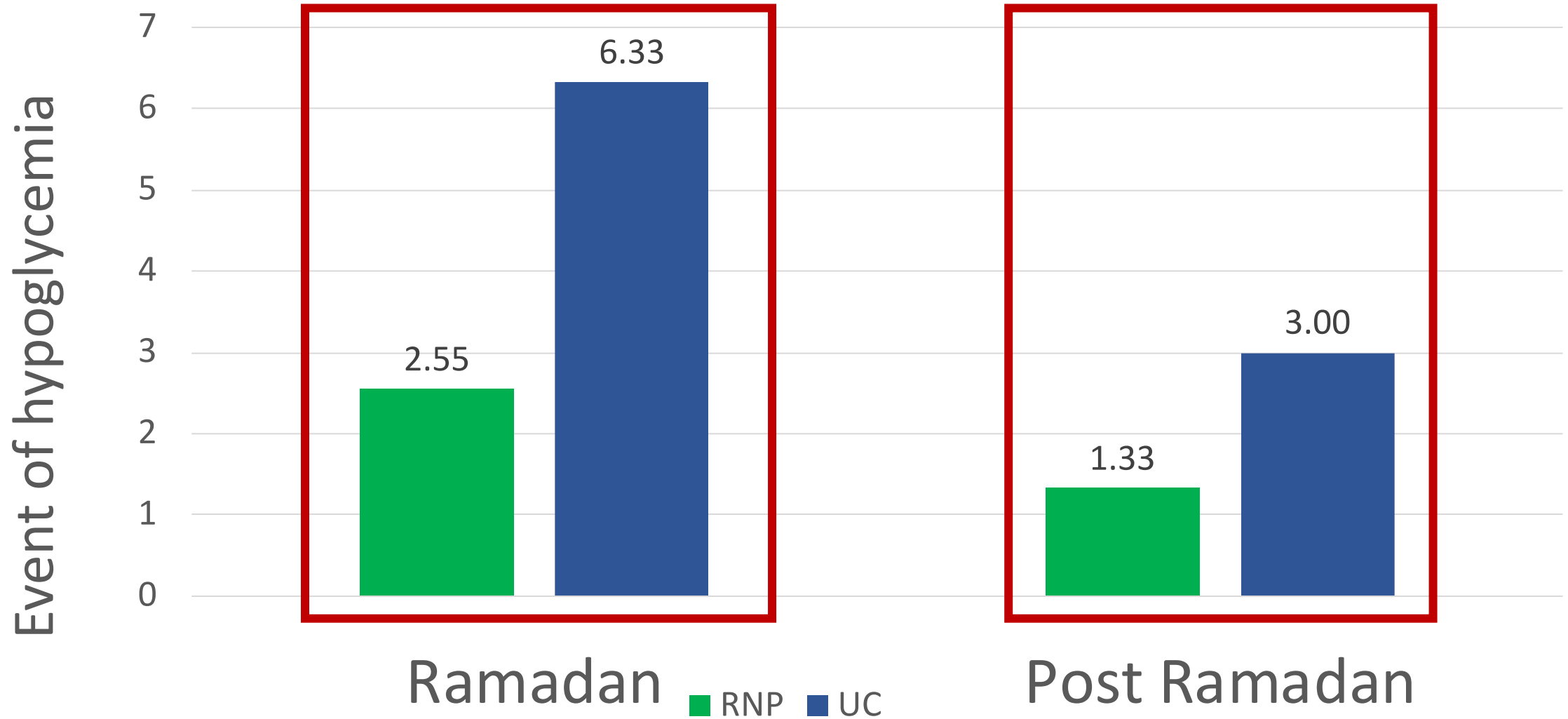


More hypo in sRNP (NS)

Group	Reduced /Changed	Increased
sRNP	8 (21%)	-
UC	2 (10%)	1 (5%)

Changes in Medication

# Frequency of hypoglycemia among those experienced hypoglycemia (Mean $\pm$ SD)



*Significant different between group ( $p < 0.05^*$ )*

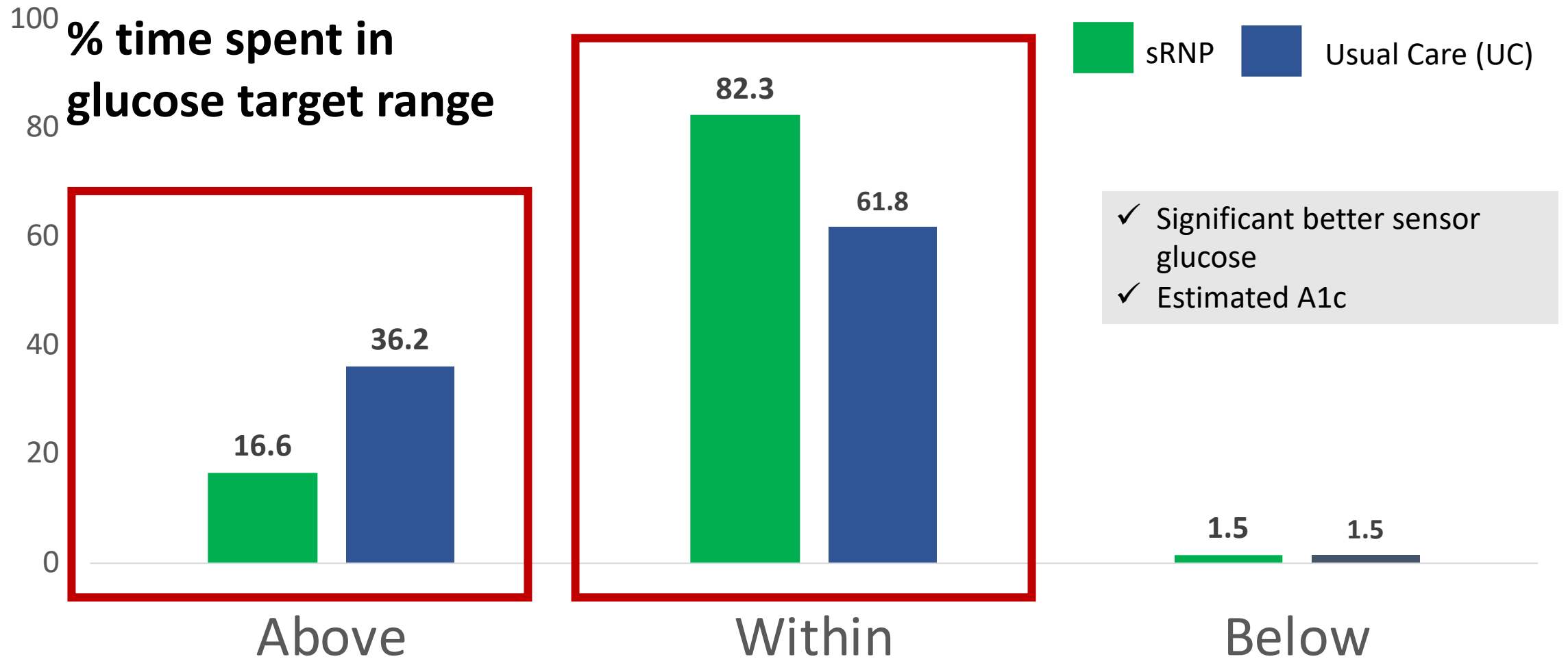
Less frequent of hypo in sRNP



**Sub-samples  
of the  
participant**

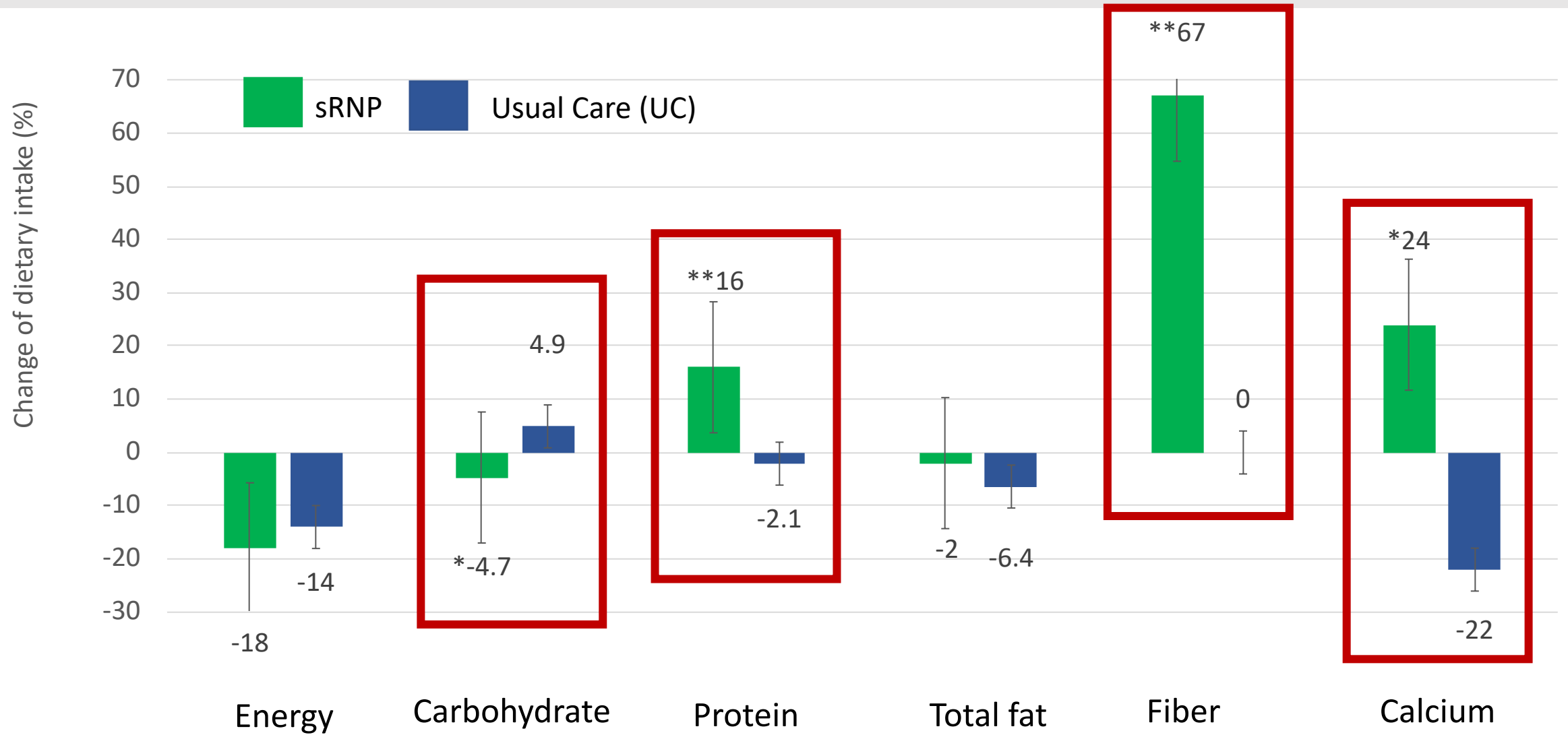
Continuous Glucose Monitoring (CGM)

# Time in Range (% IR)



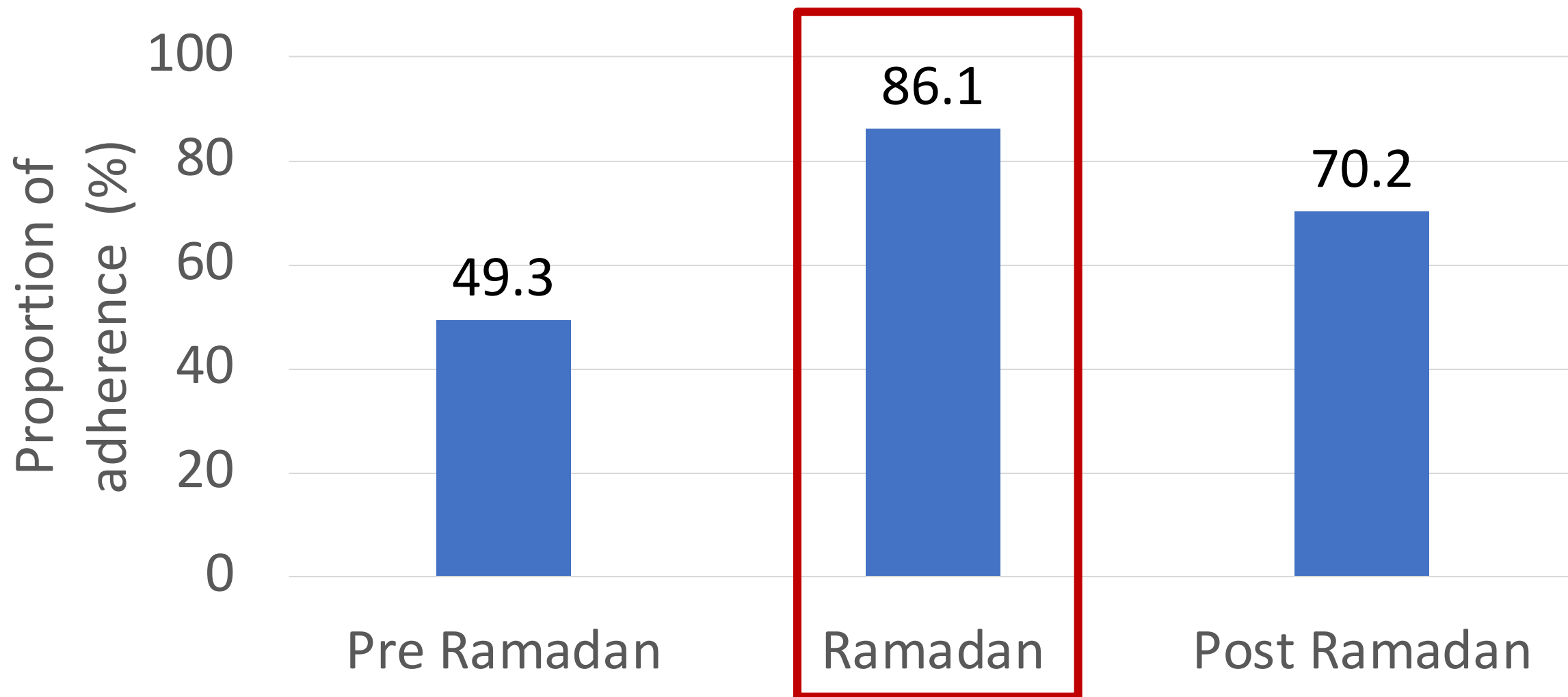
Spend more time in TIR (> 70%- associated with better complications reduction)

# Dietary Intake Changes



Significant different between group ( $p < 0.05^*$ ,  $0.01^{**}$ )

# Adherence to Diabetes Specific Formula (DSF) (% $\pm$ S.D)



*Adherence to DSF defined as consumption of at least 7 scoops of DSF per day (75%)*



# Study Conclusion

- sRNP improved FBG, and glucose profiles (pre-sahur and pre-bed throughout Ramadan) significantly than the UC group
- sRNP improved dietary intake (Carbs (% En), Protein (% En), calcium and fibre than the UC group
- **Extra care** – to ensure the hypoglycemic potential agents are modified accordingly before subscribing to sRNP

# Considerations

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- Study in nature – exploratory feasibility and non-randomized trial
- sRNP had more SU users and had higher proportion of self-reported hypoglycaemia (%) during Ramadan

# The takeaways

- sRNP is ready and proven feasible
  - Extra care for patient on insulin secretagogue
  - It was not be tested among those with insulin injection
- Ramadan nutrition – a turning point for better lifestyle practices



# My Dia-RNP Team Members

## Co-investigators:

1. Dr Wan Zul Haikal Hafiz Wan Sulaiman (Physician)
2. Dr Noraida Omar (Dietary Consultation)
3. Dr Zalina Abu Zaid (Dietary Consultation)
4. AP Dr Azrina Azlan (Development of 14-days of Ramadan Menu)
5. Prof Dr Firdaus Mamat @ Mukhtar (Quality of Life Measures)
6. AP Dr Norhasmah Sulaiman (Focus Group Discussion)
7. Dr Siti Nur Asyura Adznam (Focus Group Discussion)

**Sponsors:** Nestle' Health Science (Switzerland) and Nestle' Product Sdn. Bhd. (Malaysia)

## Mentoring:

Prof Dr Osama Hamdy  
Consultant Endocrinologist  
Joslin Diabetes Centre  
Harvard Medical School  
MA USA





My Dia-RNP Backbones

The inside story..





# Education Materials

<https://www.nestlehealthscience.my/>

nestlehealthscience.my/health-management/diabetes/pelan-pemakanan-ramadan?utm\_...

Brands Health Management Our Company

## PANDUAN PEMAKANAN BERKESAN UNTUK MENCAPAI PARAS GLUKOS DARAH YANG OPTIMUM SEMASA RAMADAN

Adakah anda mengalami diabetes? Ingin berpuasa dan menyambut hari raya, tetapi anda risaukan kawalan gula dalam darah? Penjagaan pemakanan adalah penting kepada individu dengan diabetes jenis 2 kerana ia dapat meminimalkan kesan sampingan berpuasa semasa Ramadan. Kawalan glukos darah yang baik sepanjang Ramadan dan berterusan sepanjang hayat





Anda boleh muat turun 14 hari resipi pemakanan semasa bulan Ramadan dari laman web kami [Pelan Menu 14 Hari Ramadan.pdf](#)

Sila muat turun [Pisalah panduan pemakanan berkesan semasa Ramadan](#)

Tontonilah video mengenai pelan pemakanan Ramadan & Syawal oleh pakar dietitian bagi mengawal paras gula dengan baik sepanjang bulan puasa dan musim perayaan

# Diabetes and Ramadan

 210308 Views |  60 Min |  English

     4.5 (2093 ratings) 4057 learners enrolled



In collaboration  
Diabetes and F  
Alliance

## Course overview:

This course covers four key topics on management of diabetes during Ramadan (month of fasting) namely epidemiology and physiology of diabetes and Ramadan fasting, the risks associated with fasting in people with diabetes, risk categories for people with diabetes who fast during Ramadan, Ramadan-focused diabetes education, evidence of the benefit of Ramadan-focused diabetes education and pre-Ramadan individual assessment and pharmacological management of high-risk populations during Ramadan.

FREE \*

 60 Min

Start Course



What will you learn?



Course overview





Thank you

