

Introduction

T2DM is the most common type of DM as over 90% of all cases worldwide have T2DM. It is a metabolic disorder characterized by chronic hyperglycemia frequently on the background of insulin resistance. According to the IDF, Egypt will project from the ninth leading country in the world for the number of people with diabetes in 2024 to the sixth leading country in 2050. DKD is the most common cause of ESRD. It occurs in 20-40% of individuals with DM. It is a clinical syndrome characterized by persistent albuminuria and/or a progressive deterioration in renal function in the absence of other causes of kidney damage. Fasting during Ramadan, is one of the five pillars of Islam, which is deemed as an obligatory duty for all healthy intellectually capable Muslims who have reached puberty. There are worries about the effect of Ramadan fasting on renal functions in people with CKD, especially when Ramadan falls during a hot, dry summer with plenty of daylight hours.

Aim of the Work

The present study was conducted to evaluate the effect of Ramadan fasting on kidney functions in T2DM patients.

Patients and Methods

**Pastients:** This retrospective study was conducted on 150 patients with T2DM.  
**Methods:** Data was collected retrospectively from patients' records for all T2DM patients who were registered 1 month before and after Ramadan according to:  
**1-History:** Age, gender, smoking, alcohol intake, type of diabetes, duration of diabetes, history of diabetic acute and chronic complications, hypertension, dyslipidemia, drug history, surgical history and previous Ramadan experience.  
**2-Physical examination:**  
- Vital signs: pulse and blood pressure measurement.  
-Anthropometric measures: Body weight, height, body mass index (BMI calculated as body weight divided by body height squared).  
**3-Laboratory investigations:**  
- Fasting blood glucose.  
- Glycated haemoglobin.

- Lipid profile:
  - \* Serum total cholesterol.
  - \* Serum HDL cholesterol.
  - \* Serum LDL cholesterol.
  - \* Serum triglycerides.
- Serum creatinine and calculation of the estimated glomerular filtration rate (eGFR) using the CKD-EPI (Chronic Kidney Disease Epidemiology Collaboration) Equation.
- Urinary albumin creatinine ratio.

Results

There was significant increase in serum urea and creatinine after Ramadan while, there was significant decrease in eGFR after Ramadan. (Table 1).

Table 1: Comparison between before and after Ramadan according to Renal function (n=150)

	Before Ramadan	After Ramadan	Z	P
Urea (mg/dl)				
Min. – Max.	15.0 – 146.0	15.0 – 161.0	3.688	<0.001*
Mean ± SD.	31.45 ± 14.47	34.37 ± 18.07		
Median (IQR)	30.0 (24.0 – 34.0)	30.0 (26.0 – 39.0)		
Mean Differences	-2.93 ± 11.85			
Creatinine (mg/dl)				
Min. – Max.	0.41 – 2.19	0.41 – 4.70	3.564	<0.001*
Mean ± SD.	0.80 ± 0.26	0.88 ± 0.51		
Median (IQR)	0.73 (0.63 – 0.90)	0.77 (0.65 – 0.94)		
Mean Differences	-0.08 ± 0.42			
eGFR (ml/min/m²)				
Min. – Max.	24.0 – 126.0	10.0 – 126.0	3.285	0.001*
Mean ± SD.	92.99 ± 21.13	90.27 ± 22.92		
Median (IQR)	101.0(78.0 – 108.0)	97.0 (79.0 – 107.0)		
Mean Differences	2.72 ± 11.67			

eGFR: estimated Glomerular Filtration Rate, IQR: Inter quartile rang, SD: Standard deviation, p: p value for comparing between before and after Ramadan, Z: Wilcoxon signed ranks test, \*: Statistically significant at p ≤ 0.05

Table1: Comparison between before and after Ramadan according to uACR (n=150)

	Before Ramadan		After Ramadan		Test of Sig	P
	No.	%	No.	%		
uACR (mg/g Cr)						
<30.0	91	60.7	94	62.7	MH= 49.500	0.194
30.0 – <300.0	48	32.0	49	32.7		
≥300.0	11	7.3	7	4.7		
Min. – Max.	0.90 – 2988.9		2.80 – 2975.0		Z= 2.068*	0.039*
Mean ± SD.	138.4 ± 439.5		89.97 ± 300.7			
Median (IQR)	17.25 (6.80 – 71.60)		17.0 (6.40 – 56.30)			
Mean Differences	48.41 ± 309.44					

uACR: urinary Albumin Creatinine Ratio, IQR: Inter quartile range,SD: Standard deviation, MH: Marginal Homogeneity Test,p: p value for comparing between before and after Ramadan, Z: Wilcoxon signed ranks test, \*: Statistically significant at p ≤ 0.05.

Conclusion

Ramadan fasting has beneficial effects on FPG, HbA1c and LDL as they decrease significantly after Ramadan while, there was no effect on body weight, BMI, serum total cholesterol and HDL. Despite the significant worsening of serum creatinine and eGFR after Ramadan fasting, the uACR showed significant improvement.