

Effect of the Chinese New Year on Renal Function Among Patients With Kidney Transplant: A Retrospective Cohort Study

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COI

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Introduction



- Estimated glomerular filtration rate (**eGFR**)
→ **Kidney function evaluation**
- **eGFR decline after long holiday.**
- Aim:
 1. To investigate if the change of eGFR level after traditional holidays in Taiwan is significant in population who had kidney transplantation
 2. To Identify the risk factors or comorbidities that associated to this change
- 3. Is this decline in eGFR a reversible change?

Methods



Total patients who underwent kidney transplantation from 1985 to 2017.
(n=368)

Exclusive Criteria:

- Patients followed up at other institutes (n=40)
- Patients who needs hemodialysis (n=16)
- Lost follow-up. (n=9)
- Expire (n=2)

Comparison of eGFR level before and after Chinese new year, Dragon boat festival, Mid-autumn festival from 2018 to 2022
(n=301)

Descriptive Characteristics

| Parameter | N | Data |
|--------------------------|-----|-------------|
| Age (yrs) | 301 | 54.2 ± 22.5 |
| Gender | 301 | |
| Male | 149 | 49.5% |
| Female | 152 | 50.5% |
| BMI (kg/m ²) | 294 | 22.5 ± 3.7 |
| Comorbidities | | |
| Hypertension | 217 | 72.0% |
| Diabetes mellitus | 98 | 32.5% |

Change of eGFR level before and after traditional holidays

Table 1

Change of eGFR level before and after Festivity from 2018-2022

| | eGFR Before Holiday | eGFR after Holiday | N | p value | eGFR after two months | N | p value |
|-----------------------------|------------------------|-----------------------|------|---------|--------------------------|------|---------|
| <i>Chinese New Year</i> | 54.60±24.40 | 54.84±25.93 | 1372 | 0.294 | 53.46±25.80 | 1246 | 0.003 |
| <i>Dragon Boat Festival</i> | 54.80±24.54 | 52.14±24.33 | 1360 | <0.001 | 52.70±25.66 | 1187 | <0.001 |
| <i>Mid-Autumn Festival</i> | 54.37±24.49 | 53.84±41.84 | 1356 | 0.542 | 51.94±24.82 | 1188 | <0.001 |

- Compared to before, eGFR level is significantly decreased after traditional holidays in population accepted kidney transplantation
 - Delayed eGFR decline in Chinese New year and Mid-Autumn Festival was noted
- eGFR were found to return to pre-holiday levels before the arrival of the next extended holiday

Subgroup analysis for comorbidities and gender

Table 2

| | | eGFR Before Holiday | eGFR after Holiday | Change of eGFR | N | p value |
|-----------------------------|---------------|---------------------|--------------------|----------------|------|---------|
| <i>Chinese New Year</i> | Overweight(-) | 56.09 ± 23.97 | 56.59 ± 25.27 | -0.49±8.68 | 1023 | 0..080 |
| | Overweight(+) | 50.49 ± 25.57 | 50.00 ± 27.66 | 0.49±8.99 | 316 | |
| | Male | 54.16 ± 22.69 | 54.46 ± 24.38 | -0.30±8.01 | 685 | 0.826 |
| | Female | 55.04 ± 25.99 | 55.23 ± 27.41 | -0.19±9.34 | 687 | |
| | HTN(-) | 60.37 ± 24.53 | 61.64 ± 26.26 | -1.27±8.67 | 385 | 0.007 |
| | HTN(+) | 52.35 ± 23.98 | 52.20 ± 25.33 | 0.15±8.68 | 987 | |
| | DM(-) | 55.39 ± 24.17 | 56.09 ± 25.99 | -0.70±8.32 | 933 | 0.005 |
| | DM(+) | 52.92 ± 24.82 | 52.19 ± 25.65 | 0.72±9.38 | 439 | |
| <i>Dragon Boat Festival</i> | Overweight(-) | 56.18 ± 24.32 | 53.39 ± 23.82 | 2.79±8.64 | 1019 | 0.305 |
| | Overweight(+) | 51.12 ± 25.18 | 48.89 ± 25.76 | 2.23±7.03 | 306 | |
| | Male | 54.56 ± 22.79 | 52.54 ± 23.77 | 2.02±7.51 | 675 | 0.005 |
| | Female | 55.03 ± 26.17 | 51.74 ± 24.88 | 3.29±8.84 | 685 | |
| | HTN(-) | 60.38 ± 24.41 | 57.87 ± 24.54 | 2.51±8.11 | 392 | 0.661 |
| | HTN(+) | 52.53 ± 24.25 | 49.81 ± 23.87 | 2.72±8.28 | 968 | |
| | DM(-) | 55.48 ± 24.22 | 53.08 ± 24.38 | 2.41±7.82 | 931 | 0.099 |
| | DM(+) | 53.29 ± 25.20 | 50.10 ± 24.12 | 3.20±9.03 | 429 | |
| <i>Mid-Autumn Festival</i> | Overweight(-) | 55.80 ± 24.22 | 55.67 ± 45.81 | 0.13±37.47 | 1018 | 0.452 |
| | Overweight(+) | 50.29 ± 25.26 | 48.54 ± 26.37 | 1.75±6.89 | 307 | |
| | Male | 54.60 ± 23.19 | 53.65 ± 24.57 | 0.95±7.71 | 680 | 0.638 |
| | Female | 54.14 ± 25.74 | 54.03 ± 53.92 | 0.11±45.60 | 676 | |
| | HTN(-) | 60.21 ± 24.05 | 58.61 ± 24.32 | 1.60±7.69 | 380 | 0.452 |
| | HTN(+) | 52.09 ± 24.29 | 51.98 ± 46.81 | 0.11±38.18 | 976 | |
| | DM(-) | 54.99 ± 24.08 | 53.73 ± 24.75 | 1.26±7.28 | 921 | .231 |
| | DM(+) | 53.05 ± 25.07 | 54.07 ± 64.56 | -1.02±56.67 | 435 | |

Multivariate analysis for risk factors of post-holiday eGFR decline

Logistic regression analysis for possible predictive risk factors of post-holidays eGFR declines after holiday

| | Predictive risk factor | delta Odds ratio | 95% CI | p value |
|-----------------------------|------------------------|------------------|----------------|---------|
| <i>Chinese New Year</i> | DM(-) | -0.298 | [0.585, 0.942] | 0.014 |
| <i>Dragon Boat Festival</i> | Female | 0.387 | [1.180, 1.836] | 0.001 |
| | Holiday length | 0.925 | [1.894, 3.356] | <0.001 |
| <i>Mid-Autumn Festival</i> | Age | -0.010 | [0.981, 0.999] | 0.026 |
| | Female | 0.261 | [1.041, 1.619] | 0.020 |
| | Overweight(-) | -0.272 | [0.587, 0.989] | 0.041 |

Interpretation of the Results



- Life style during Traditional holidays:
 - High-fat diet
 - Much more calories intake than usual
 - Sedentary
 - Less exercise
 - A higher relative fat intake increased the risk of kidney function impairment in population of CKD.(Sehoon Park, *et al.* 2021.)
 - Elevated tryglyceride, elevated fasting blood glucose were significantly associated with the prevalence of CKD in patients with hypertension. (Kun Xie, *et al.* 2019.)
- Calories of traditional dishes of Chinese new year could be **3200 kcal/meal, saturated fat 66 g** (Ministry of Health and Welfare of Taiwan)

Conclusion



- This study observed a significant yet temporary decline in renal function among kidney recipients after the Dragon Boat Festival in Taiwan. In contrast, the significant decline in eGFR following the Chinese New Year and Mid-Autumn Festival were observed to occur with a delay. Diabetes was identified as a risk factor for the post-Chinese New Year decline in eGFR, while female gender and longer holiday duration were associated with the decline in eGFR after the Dragon Boat Festival. However, these significant post-holiday declines in eGFR were found to return to pre-holiday levels before the arrival of the next extended holiday.