# Body Mass Index (BMI) and Survival in Polycystic Kidney Disease (PKD) Hemodialysis (HD) Patients

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## Background

- Higher body mass index (BMI), even to levels of obesity, may be associated with greater survival in dialysis patients.
- We hypothesized that this relationship may also hold in polycystic kidney disease (PKD) hemodialysis (HD) patients and examined the 3-yr (7/2001-6/2004) survival of 1,596 PKD patients in DaVita® dialysis clinics across the United States

## Methods

- We used both baseline & time-dependent Cox models, adjusted for case-mix & malnutrition-inflammation-cachexia syndrome (MICS)
- The 3-yr death hazard ratios (HR) (and 95% confidence levels) of the BMI increments based on 3-month averaged post-HD dry weight) were calculated
  - <20 kg/m$^2$ [reference]
  - 20-<23 kg/m$^2$
  - 23-<25 kg/m$^2$
  - 25-<30 kg/m$^2$
  - 30-<35 kg/m$^2$
  - ≥35 kg/m$^2$

## Results

| | Baseline | | | Case-mix | | | MICS | | |
|---|---|---|---|---|---|---|---|---|---|
| | P-value | HR | 95% CI | | P-value | HR | 95% CI | | P-value | HR | 95% CI | |
| <20 | <.0001 | 0.56 | 0.43 | 0.72 | <.0001 | **0.55** | 0.42 | 0.72 | 0.03 | **0.73** | 0.55 | 0.98 |
| 20 - <23 | <.0001 | 0.42 | 0.31 | 0.56 | <.0001 | **0.46** | 0.33 | 0.63 | 0.01 | **0.66** | 0.47 | 0.93 |
| 23 - <25 | <.0001 | 0.39 | 0.30 | 0.51 | <.0001 | **0.44** | 0.33 | 0.60 | 0.00 | **0.60** | 0.44 | 0.83 |
| 25 - <30 | <.0001 | 0.31 | 0.19 | 0.49 | <.0001 | **0.41** | 0.25 | 0.66 | 0.17 | **0.70** | 0.42 | 1.16 |
| >=30 | <.0001 | 0.24 | 0.14 | 0.40 | <.0001 | **0.36** | 0.21 | 0.62 | 0.14 | **0.65** | 0.37 | 1.15 |
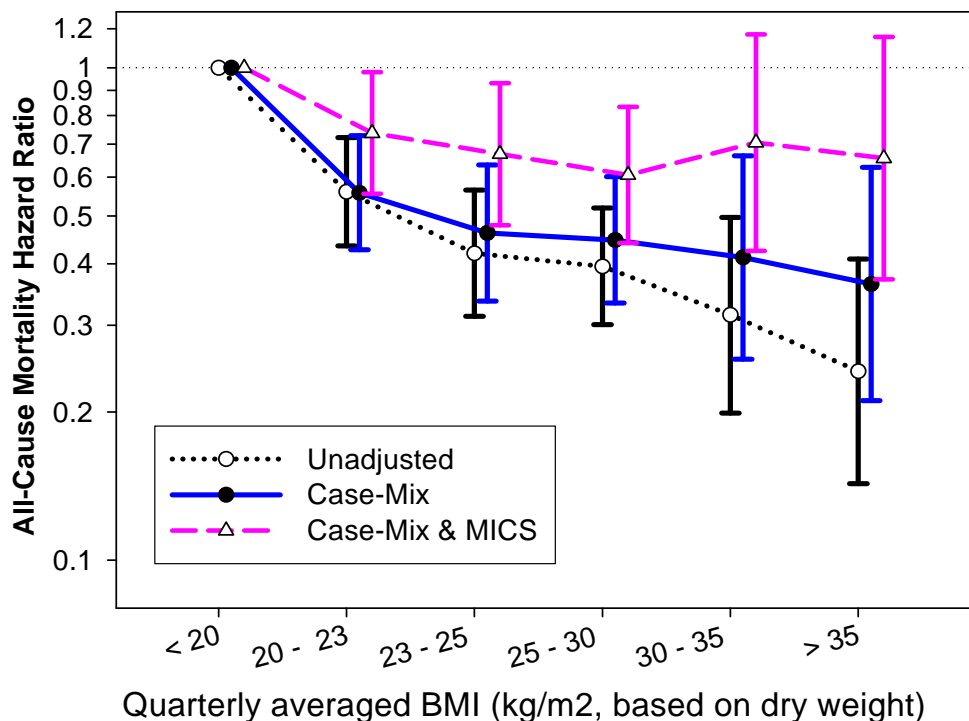


- In time-dependent case-mix adjusted models, survival was linearly superior across BMI increments (see Figure)
- In MICS models, the greatest survival was associated with BMI in 25-30 kg/m2: HR 0.5 (95% CI: 0.3-0.6). Death risk of BMI ≥35 kg/m2 (morbid obesity) after adjustment for case-mix was 0.6 (0.4-0.8) but after additional adjustment for MICS was 0.7 (0.4-1.2)

## Conclusions

Hence, in PKD HD pts, higher BMI up to 30 kg/m$^2$ in each calendar quarter is independently associated with greater survival.

The survival advantage of BMI ≥30 is probably related to better nutritional and inflammatory profiles.

Obesity (BMI≥30 kg/m$^2$) per se does not appear to offer greater survival in PKD.