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Letter to the Editor

LETTER TO THE EDITOR

Long-term peritoneal dialysis is associated with a decrease in body weight

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Malnutrition and low body mass are associated with higher mortality in peritoneal dialysis (PD). The Canada-USA (CANUSA) PD study showed that there was a 3% increase in the relative risk of death with a 1% lower lean body mass [1].

In contrast, the relationship of obesity with survival in the PD population is unclear. Even the 'reverse epidemiology' phenomenon in hemodialysis has been challenged [2]. In >15 000 incident PD patients, a U-shaped association between body mass index (BMI) and mortality was noted, with the greatest survival found in a BMI range of 30–<35 kg/m^2 [3]. We have shown that the concept of reverse epidemiology, specifically in PD, needs to be reversed [4].

Glucose absorption during PD can be from 100 to 700 g/day depending on the dialysate used, dwell time and peritoneal permeability. This can lead to an increase in both subcutaneous and visceral fat as early as in the first 6 months [5]. Some of the earliest papers reported weight gain of 9–16% of initial weight in the first few years of PD [6–9]. Most of the weight gain was mainly due to an increase in body fat volume (BFV) [10].

Data were used to identify Kaiser Permanente Southern California members with 3–5 consecutive years of PD, initiated between January 1998 and December 2015. A member's index date was set as the first PD event in the study window. Members were excluded if they were <18 years of age, had a kidney transplant, had a mode change or had died or disenrolled before their third consecutive PD year. At this initial point we had 1394 members. Height, weight and BMI data were collected for this cohort from 2 years preindex to up to 5 years postindex. The baseline measurements were taken from the date in the preindex period closest to the PD index date. A total of 1020 members had such a baseline measurement. There were 535 patients who survived for 5 years. For each year (365-day period) after the index date, the measurements closest to the 365th day were taken as representative for that year. For a given member, postindex data could be truncated by death and/or the end of the study period. Other covariates include age, gender and ethnicity.

The primary outcomes were change in weight between baseline and Years 1, 2, 3, 4 or 5. A t-test was used to evaluate if there was a significant mean difference of weight changes between males and females, as well as between diabetic and nondiabetic patients.

Baseline characteristics are shown in Supplementary data, Table S1. Of those who survived 5 years, overall weight from baseline to Year 5 was a decrease of 6.54 lb. Mean weight decreases were 7.53 lb in males and 5.17 lb in females (Figure 1). There was no statistically significant difference between males and females ($P = 0.35$). There was no difference detected in weight drops between diabetics (−7.55 lb) and nondiabetics (−3.35 lb) ($P = 0.11$) (Supplementary data, Table S2a).

Regarding BMI, there was an average decrease of 0.93 BMI from baseline to Year 5. No difference in BMI decreases was detected between males (−1.01) and females (−0.82) ($P = 0.64$), as well as between diabetics (−1.10) and nondiabetics (−0.39) ($P = 0.12$) (Table 1).

The limitations of this study include the absence of data on fluid status and body composition of patients, use of icodextrin, use of insulin and residual renal function.

Large-scale, long-term prospective study is needed to determine what kind of changes in body weight compartments, like fat mass and lean body mass, occur in the PD population over time.

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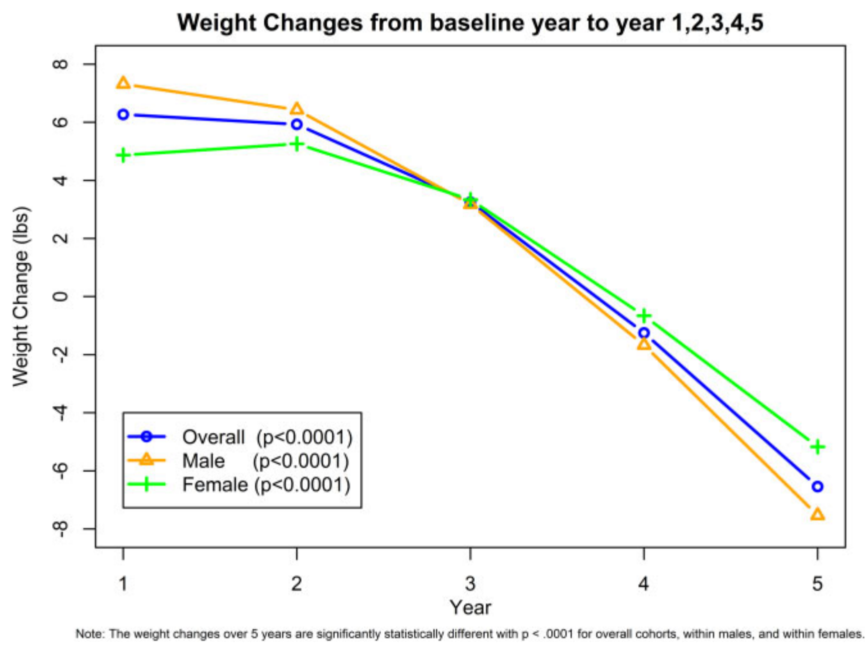

FIGURE 1: Overall change in weight for patients who have been followed for 5 years.

Table 1. Change in BMI each year for patients who have been followed for 5 years

	Change in BMI						
		Gender			Diabetics		
Time on PD	Overall, (mean ± SD)	Male, (mean ± SD)	Female, (mean ± SD)	P-value	No, (mean ± SD)	Yes, (mean ± SD)	P-value
Baseline to Year 1	0.98 ± 2.67	1.11 ± 2.42	0.82 ± 2.97	0.31	0.98 ± 2.10	0.98 ± 2.83	0.99
Baseline to Year 2	0.95 ± 2.96	0.92 ± 2.62	0.99 ± 3.36	0.83	0.62 ± 2.53	1.05 ± 3.07	0.19
Baseline to Year 3	0.53 ± 3.24	0.51 ± 2.93	0.55 ± 3.63	0.90	0.17 ± 3.12	0.64 ± 3.27	0.23
Baseline to Year 4	−0.13 ± 3.61	−0.15 ± 3.06	−0.11 ± 4.27	0.93	0.23 ± 3.14	−0.25 ± 3.75	0.22
Baseline to Year 5	−0.93 ± 3.90	−1.01 ± 3.42	−0.82 ± 4.48	0.64	−0.39 ± 3.46	−1.10 ± 4.02	0.12

SUPPLEMENTARY DATA

Supplementary data are available at ckj online.

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AUTHORS' CONTRIBUTIONS

All authors contributed to the intellectual development of this article. The final version of this article was read and approved by all the authors.

CONFLICT OF INTEREST STATEMENT

None declared. The results presented in this article have not been published previously in whole or part.

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