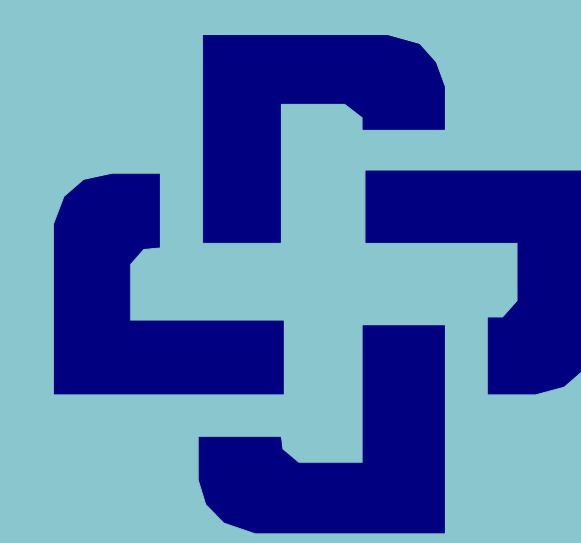




# Relation between BCM and Echocardiographic Parameters Reflects Volume Status in Peritoneal Dialysis Patients



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## BACKGROUND

- Fluid imbalance is a frequent condition in peritoneal dialysis (PD) patients. Fluid overloading is one of causes to lead to cardiovascular instability.
- Even though there are no accurate methods to determine volume status in PD, body composition monitor (BCM) is used as an objective measurement.
- The aim of this study was to find echocardiographic parameters associated with volume status compared to BCM parameters in PD patients.

## METHOD

- This study was conducted on 74 PD patients in Busan Paik Hospital during 2014–2015. We used BCM to assess volume status, echocardiography to evaluate heart function and structure, and collected epidemiologic data. To account for the relation between BCM and echocardiographic parameters, we conducted regression analysis.

## RESULTS

- Patients were 46±12 years old, 55% female, and 39% diabetic. Median dialysis vintage was 25.3 months (IQR 1.6, 127.2 months). (Table 1)
- A total of 6 (8%) all-deaths were reported. 10 (13%) among 74 patients received kidney transplantation, 10 patients transferred from PD to hemodialysis.

Table 1. Baseline characteristics in 74 PD cohort

Variables	
Age (years)	46±12
Female (%)	55%
Diabetes (%)	39%
Dialysis vintage (month)	25.3 (1.6, 127.2)
Overhydration(L)	3.2±2.6
Hypertention (%)	77%
ADPKD (%)	1%
HBV positive (%)	4%
Cancer (%)	4%
BMI (kg/m <sup>2</sup> )	22.6±3.5
Overhydration (L)	3.2±2.6
Relative overhydration (%)	17.7±14.4 (%)
LTI (kg/m <sup>2</sup> )	13.5±2.6
FTI (kg/m <sup>2</sup> )	7.2 (5.2, 11)
TBW (L)	33.6±6.8
ECW (L)	16.4±3.8
ICW (L)	17.2±3.8
LVEDD (mm)	51.7 (46.6, 54.4)
LVESD (mm)	32.9 (29.5, 38.4)

abbreviation: ADPKD; autosomal dominant polycystic kidney disease, HBV; hepatitis B virus, BMI; body mass index, LTI; lean tissue index, FTI; fat tissue index, TBW; total body water, ECW; extracellular water, ICW; intracellular water, LVEDD; left ventricle enddiastolic dimension, LVESD; left ventricle endsystolic dimension

- Relative overhydration (RelOH) had positive correlation with systolic blood pressure ( $r^2=0.12$ ,  $p=0.003$ ), diastolic blood pressure ( $r^2=0.07$ ,  $p=0.03$ ) (Figure 1(A)(B)), and extracellular water (ECW) ( $r^2=0.27$ ,  $p<0.001$ ). (Figure 2(A))

- Conversely RelOH had negative correlation with intracellular water ( $r^2=0.08$ ,  $p=0.02$ ) and lean tissue index ( $r^2=0.17$ ,  $p=0.003$ ). (Figure 2(B))

- ECW had positive correlation with left ventricular end diastolic dimension (LVEDD) ( $r^2=0.27$ ,  $p<0.001$ ) (Figure 3), and left ventricular diastolic posterior wall thickness (LVDPT) ( $r^2=0.14$ ,  $p=0.003$ ).

Figure 1. (A) Scatterplot between RelOH and systolic BP (B) Scatterplot between RelOH and diastolic BP

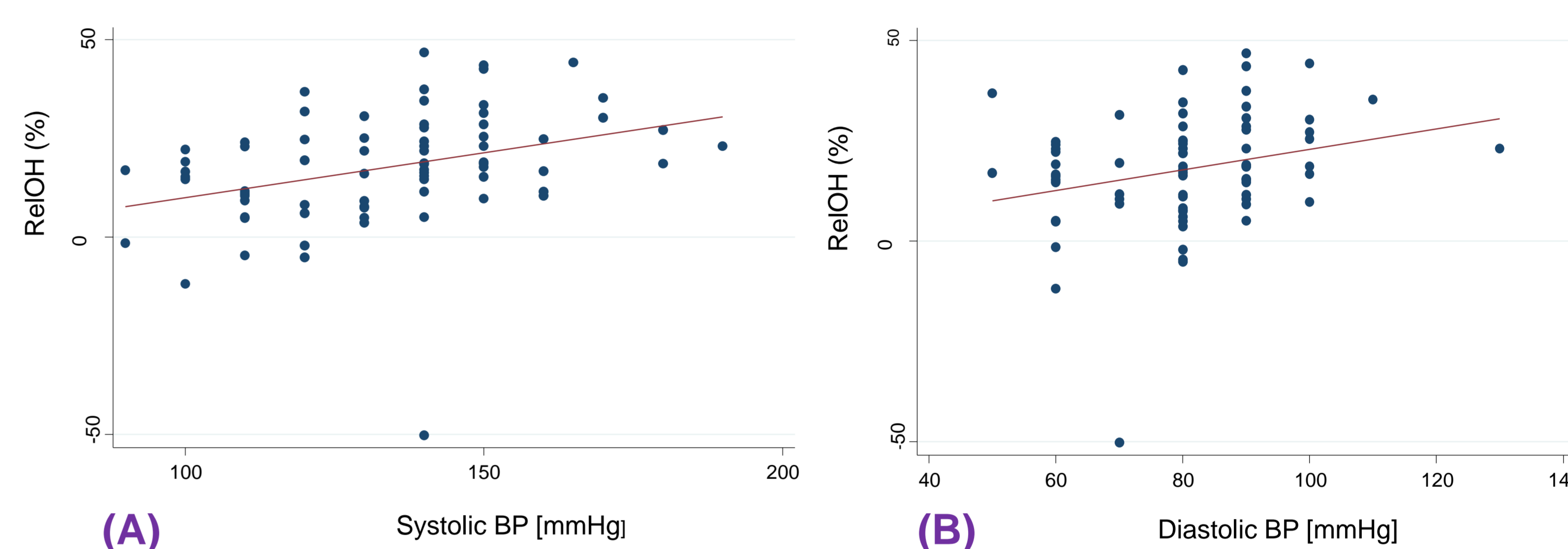


Figure 2. (A) Scatterplot between RelOH and ECW (B) Scatterplot between RelOH and ICW

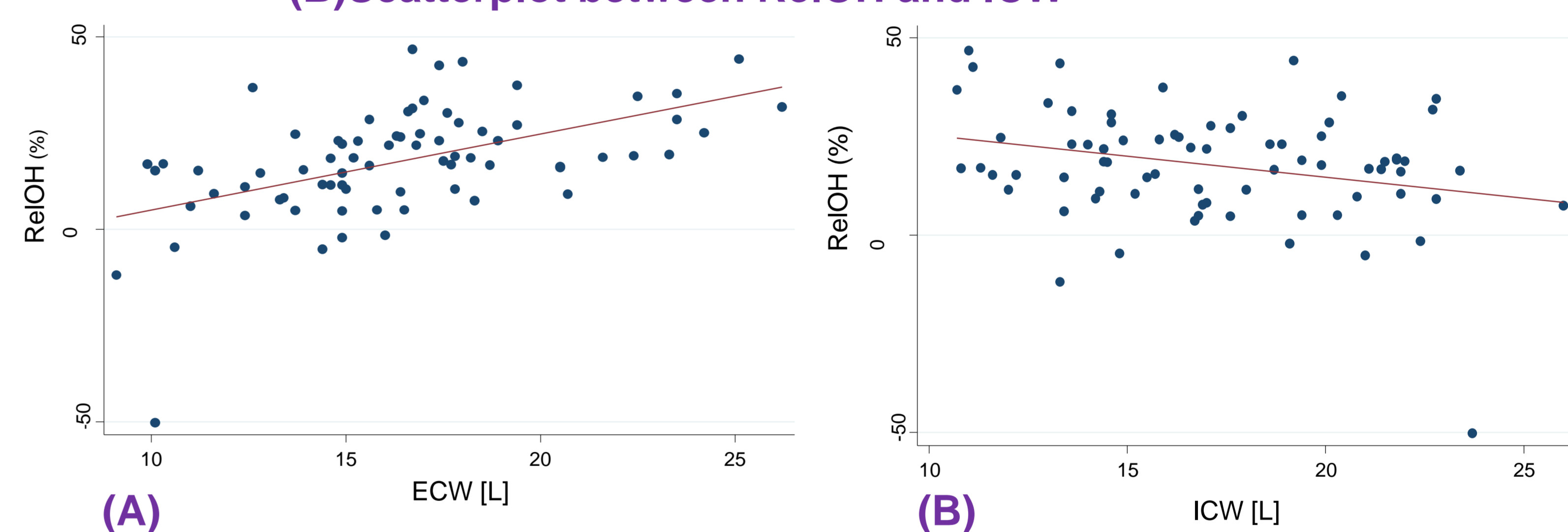
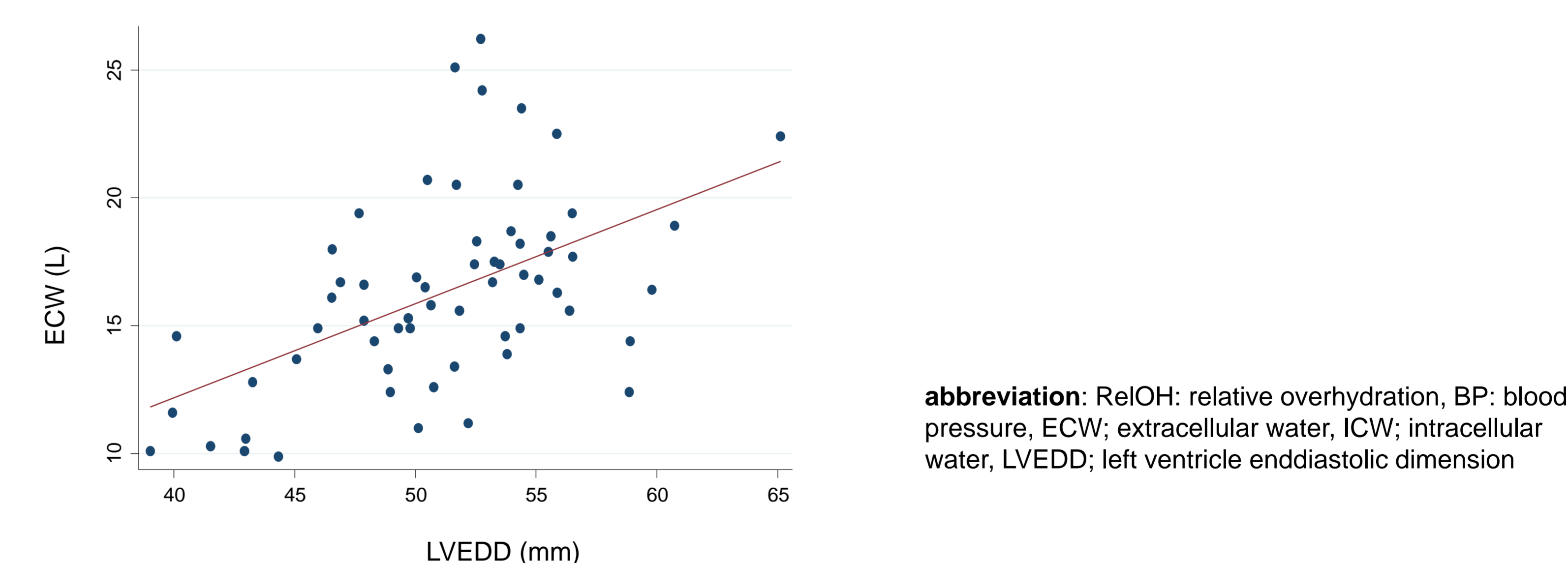


Figure 3. Scatterplot between ECW and LVEDD



abbreviation: RelOH: relative overhydration, BP: blood pressure, ECW; extracellular water, ICW; intracellular water, LVEDD; left ventricle enddiastolic dimension

## CONCLUSION

- Fluid overload in PD patients was associated with rise in ECW, which increased according as LVEDD enlargement.
- Echocardiographic parameters of Left ventricle were good markers of volume status in PD patients.
- Further studies to understand the change in volume status over time are needed.

