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Association of Interdialytic Weight Gain with Dialysis Malnutrition Score among Hemodialysis Patients in Universitas Gadjah Mada Hospital Yogyakarta-Indonesia

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Objectives: High interdialytic weight gain (IDWG) is a common problem in hemodialysis patient which is associated with complications such as hypertension, congestive heart failure, and higher mortality risk. Higher IDWG influenced excessive fluid removal during hemodialysis that may result in hypotension, muscle cramps, nausea, and headache. Those negatively impact could contribute to malnutrition in hemodialysis patients. The aim of the study was to determine the relationship between interdialytic weight gain with dialysis malnutrition score on hemodialysis patients.

Methods: Cross-sectional study of 70 hemodialysis patients from dialysis unit of Universitas Gadjah Mada Hospital was conducted on January 2019. Subjects were assessed using Dialysis Malnutrition Score (DMS), anthropometric measurement, and characteristics data (age, gender, dialysis vintage). Adequacy of IDWG was divided into adequate (%IDWG ≤5%) and increased (%IDWG >5%). The DMS was classified as well-nourished (score 7-10) and malnutrition (score >10). Chi-square was used for correlation analysis and t-test was used for comparison of %IDWG mean according to subject characteristics.

Results: The 34% of subjects had adequate %IDWG. Nutritional status based on DMS, 59% of subjects was at malnutrition. Mean of %IDWG in females subject was significantly higher than males (6,29 ± 2,65 *vs.* 5,08 ± 2,12, *p* 0,037), while in adults was significantly higher than elderly (5,89 ± 2,51 vs. 4,12 ± 1,05, *p* 0,032). Compared with dialysis vintage (DV), mean of %IDWG was significantly higher in subjects with >1 year DV than subject with <1 year DV (5,77 ± 2,46 *vs.* 3,84 ± 0,94, *p* 0,048). Interdialytic weight gain was associated with DMS (*p* 0,036).

Conclusions: There is significant association between interdialytic weight gain with dialysis malnutrition score. Based on this study, gender, age, and dialysis vintage are significant factors that may related to %IDWG.

Figure 1. Main features of the study

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Table 1. Differences of mean %IDWG according to patient characteristics

Characteristics (n)	% IDWG		
	Mean ± SD	*P* Value*	95% CI
Age			
Adults (60)	5,89 ± 2,51	0,032	0,15 – 3,39
Elderly (10)	4,12 ± 1,05		
Gender			
Male (38)	5,08 ± 2,12	0,037	-2,35 – (-0,08)
Female (32)	6,29 ± 2,65		
Diabetes Mellitus			
With (26)	5,94 ± 2,16	0,425	-0,72 – 1,69
Without (44)	5,46 ± 2,62		
Cardiovascular History			
With (23)	5,21 ± 1,83	0,317	-1,86 – 0,61
Without (47)	5,84 ± 2,68		
Dialysis vintage			
< 1 year (5)	3,84 ± 0,94	0,048	0,043 – 0,052
>1 year (65)	5,77 ± 2,46		
Body Mass Index			
Underweight (10)	5,88 ± 2,88	0,736	-1,38 – 1,95
Well-nourished (60)	5,59 ± 2,38		

Table 2. Correlations between %IDWG and the study variable

Variable	%IDWG [n (%)]		*P**
	Adequate	Increased	
DMS			
Well-nourished (n=19)	12	7	0,036
Malnutrition (n=51)	18	33	

%IDWG: percentage of interdialytic weight gain; DMS: dialysis malnutrition score; *p <0,05*