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SOCIO-DEMOGRAPHIC FACTORS, DIETARY INTAKE AND NUTRITIONAL STATUS IN HEMODIALYSIS PATIENTS IN UNIVERSITAS GADJAH MADA HOSPITAL YOGYAKARTA-INDONESIA

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Objectives: Malnutrition is the most common kind of problems in maintenance hemodialysis patients. Investigation for some clinical factors that related to malnutrition has been widely done, but investigation for non-clinical factor is still limited. Socio-demographic factors is one of non-clinical factors that may influence patient's nutritional status. We aim to acknowledge the association between socio-demographic factors with dietary intake and nutritional status in hemodialysis patients.

Methods: This observational research with cross-sectional study design was conducted in dialysis unit Universitas Gadjah Mada Hospital on January 2019. We involved 73 hemodialysis patients and collected information regarding socio-demographic characteristic (age, sex, education level, ethnic, religion, occupation, marital status, and monthly income), nutrition intake (energy and protein) using form 24-hours recall, anthropometry data (Body Mass Index/BMI and Mid Upper Arm Circumference/MUAC), and physical data using handgrip strength (HGS) dynamometer.

Results: Prevalence of underweight among participants was 13.7% based on BMI. Adequate energy intake was found in only 37.0% of all participants, while adequate protein intake was 20.5%. Socio-demographic factors was not significantly associate with BMI, MUAC, and energy-protein intake. The only factors that related to nutritional status based on BMI was education level ($p=0.009$) and based on MUAC were gender ($p=0.003$) and occupation ($p=0.034$). The mean of energy intake was significantly higher among male ($p=0.010$) and adult participant ($p=0.031$), while protein intake was significantly higher solely among adult participant ($p=0.048$). We found that male, adult, javanese ethnic, worked participants and higher income had strong handgrip mean value ($p=0.016$; 0.045 ; 0.008 ; 0.009 and 0.043 , respectively).

Conclusions: Gender, education level and occupation are related to nutritional status based on BMI and MUAC. Dietary intake is significantly higher among male and adult participant. The HGS is higher in male, adult, javanese ethnic, employed participants and higher income.

Table 1. Association between Sociodemography and Nutritional Status

Table 1. Association between Socio-demographic Factors with Dietary Intake and Nutritional Status

Socio-demographic factors	Energy Intake (kcal)			Protein Intake (grams)			Body Mass Index (kg/m ²)			Mid Upper Arm Circumference (cm)		
	Inadequate n(%)	Adequate n(%)	p	Inadequate n(%)	Adequate n(%)	p	Malnutrition n(%)	Well-nourished n(%)	p	Poor n(%)	Normal n(%)	p
Gender												
Men	26(66.7)	13(33.3)	0.326	30(76.9)	9(23.1)	0.391	4(10.3)	35(89.7)	0.282	33(84.6)	6(15.4)	0.003*
Women	20(58.8)	14(41.2)		28(82.4)	6(17.6)		6(17.6)	28(82.4)		18(52.9)	16(47.1)	
Age												
Adult (18 – 64 years old)	39(61.9)	24(38.1)	0.454	49(77.8)	14(22.2)	0.341	9(14.3)	54(85.7)	0.587	44(69.8)	19(30.2)	0.652
Elderly (≥65 years old)	7(70.0)	3(30.0)		9(90.0)	1(10.0)		1(10.0)	9(90.0)		7(70.0)	3(30.0)	
Ethnic												
Javanese	45(64.3)	25(35.7)	0.307	57(81.4)	13(18.6)	0.105	9(12.9)	61(87.1)	0.362	48(68.6)	22(31.4)	0.335
Non-javanese	1(33.3)	2(66.7)		1(33.3)	2(66.7)		1(33.3)	2(66.7)		3(100.0)	0(0.0)	
Religion												
Moslem	37(60.7)	24(39.3)	0.275	48(78.7)	13(21.3)	0.532	8(13.1)	53(86.9)	0.520	42(68.9)	19(31.1)	0.481
Non-moslem	9(75.0)	3(25.0)		10(83.3)	2(16.7)		2(16.7)	10(83.3)		9(75.0)	3(25.0)	
Marriage status												
Not marriage/divorced	12(66.7)	6(33.3)	0.470	13(72.2)	5(27.8)	0.287	3(16.7)	15(83.3)	0.469	14(77.8)	4(22.2)	0.298
Married	34(61.8)	21(38.2)		45(81.8)	10(18.2)		7(12.7)	48(87.3)		37(67.3)	18(32.7)	
Education level												
Not-educated	6(50.0)	6(50.0)	0.553	8(66.7)	4(33.3)	0.486	6(50.0)	6(50.0)	0.009*	11(91.7)	1(8.3)	0.061
High school	28(66.7)	14(33.3)		38(90.5)	4(9.5)		2(4.8)	40(95.2)		25(59.5)	17(40.5)	
University degree	12(63.2)	7(36.8)		12(63.2)	7(36.8)		2(10.5)	17(89.5)		15(78.9)	4(21.1)	
Occupation												
Not worked	17(51.5)	16(48.5)	0.054	27(81.8)	6(18.2)	0.438	7(21.2)	26(78.8)	0.088	19(57.6)	14(42.4)	0.034*
Worked	29(72.5)	11(27.5)		31(77.5)	9(22.5)		3(7.5)	37(92.5)		32(80.0)	8(20.0)	
Monthly income												
≤1,500,000 – 5,000,000 IDR	38(59.4)	26(40.6)	0.084	53(82.8)	11(17.2)	0.079	9(14.1)	55(85.9)	0.643	45(70.3)	19(29.7)	0.549
>5,000,000 – ≥7,000,000 IDR	8(88.9)	1(11.1)		5(55.6)	4(44.4)		1(11.1)	8(88.9)		6(66.7)	3(33.3)	

*p<0.05 is statistically significant

Table 2. Mean Value of Nutritional Status

Socio-demographic factors	Energy Intake (kcal)		Protein Intake (grams)		BMI ^a (kg/m ²)		MUAC ^b (cm)		HGS ^c (kg)	
	Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p
Gender										
- Male	1046.36±447.6		36.15±16.4		22.36±3.6		25.41±4.1		22.54±10.9	
- Female	874.97±484.0	0.010*	28.32±16.7	0.096	22.24±4.9	0.125	24.76±3.9	0.685	14.38±6.5	0.016*
Age										
- Adult (18 – 64 years old)	1004.03±480.9		33.95±17.0		22.48±4.4		25.25±4.2		19.05±10.5	
- Elderly (≥65 years old)	730.30±314.3	0.031*	23.40±13.8	0.048*	21.20±2.9	0.383	24.20±2.9	0.274	16.80±5.2	0.045*
Ethnic										
- Javanese	965.89±476.6		31.96±16.4		22.40±4.3		25.19±4.0		18.86±10.0	
- Non-javanese	981.67±318.9	0.528	45.33±25.9	0.251	20.00±2.0	0.276	23.33±1.2	0.150	16.00±9.8	0.008*
Religion										
- Moslem	993.70±486.1		33.46±17.3		22.34±4.4		25.23±4.1		19.25±10.3	
- Non-moslem	828.42±360.0	0.462	27.67±14.2	0.577	22.08±3.2	0.378	24.50±3.5	0.641	16.17±7.5	0.296
Marriage status										
- Not married/divorced	926.17±438.5		33.00±18.9		21.94±5.3		24.56±3.1		17.5±9.8	
- Married	979.75±482.5	0.798	32.35±16.4	0.238	22.42±3.9	0.635	25.29±4.2	0.337	19.15±10.1	0.451
Education level										
- Not-educated	842.08±321.6		31.17±15.7		19.17±3.0		22.00±1.9		14.42±7.6	
- Educated	991.02±491.9	0.232	32.77±17.2	0.912	22.92±4.2	0.530	25.72±4.0	0.031*	19.59±10.2	0.056
Occupation										
- Not worked	979.06±495.3		31.15±17.1		22.52±5.1		24.85±4.0		14.91±6.5	
- Worked	956.20±453.4	0.867	33.63±16.8	0.853	22.13±3.5	0.699	25.33±4.0	0.515	21.90±11.2	0.009*
Monthly income										
- ≤1,500,000 – 5,000,000 IDR	954.89±470.4		31.05±15.5		22.22±4.4		25.06±3.8		17.86±9.2	
- >5,000,000 – ≥7,000,000 IDR	1049.33±483.0	0.944	42.89±23.0	0.063	22.89±3.4	0.436	25.44±5.4	0.238	25.00±13.1	0.043*

^ap<0.05 is statistically significant; ^bBMI: Body Mass Index, ^cMUAC: Mid Upper Arm Circumference, ^dHGS: Handgrip Strength