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Integrated Personalized Lifestyle Management Program for Diabetic Nephropathy Control in Limited Resources Healthcare Facility: Randomized Controlled Trial

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Objectives : The aim of this study was to determine role of integrated personalized lifestyle management (IPLM) program for Diabetic Nephropathy Control.
Methods : This randomized controlled trial held in Sumber Waras Hospital, Jakarta, Indonesia, from December 2022 until December 2023. Main inclusion criteria were T2DM patient >18 years diagnosed with Mild Diabetic Retinopathy (urine albumin 30-300mg/g) and earnestly involved the program for 1 year. The intervention group received IPLM program consists: (1) structured individual assessment and training by professional medical team (2) structured diet supervision, include restricted protein diet (0.6-0.8g/dL) with plant-based protein preference (3) structured regular group exercise (4) structured group-based discussion and professional sharing (5) regular treatment effectiveness assessment Meanwhile the control group only received regular treatment assessment. The biopsy done in selected subject before and after IPLM program, classified further into four hierarchical glomerular lesions by Tervaert et al. The outcome was kidney function (urine albumin, eGFR, and biopsy stage) and diabetes control (HbA1c)
Results : Total 100 subject randomized in study period (52 intervention, 48 control group). There no significance demographic and clinical data in each group before trial. The intervention group show significance urine albumin regression (144.2 ± 11.6 to 57.1 ± 8.3 vs 142.8 ± 12.9 to 138.5 ± 11.7, p<0.000), eGFR increment (65.1 ± 10.4 to 77.1 ± 10.3 vs 64.8 ± 9.9 to 61.5 ± 13.3, p<0.000), and glycemic control improvement after 1 year program (mean HbA1c 6.1 ± 1.2 vs 7.3 ± 1.6), p=0.01. Total 10 intervention subject selected for renal biopsy, and show improvement of glomerular lesion (class 2B into 2A in 7 subjects, class 2A into 1 in 3 subjects).
Conclusions : This IPLM program resulted in greater improvement of Diabetic Nephropathy, even in limited resourced facility. This program may have the potential benefit for individual person living with kidney disease in the future.

Picture1.png

	Pre-Intervention			Post-Intervention		
	Intervention Group (n=52)	Control Group (n=48)	p value	Intervention Group (n=52)	Control Group (n=48)	p value
Age (years)	51.33 ± 8.32	52.72 ± 7.91	p>0.05			
Female (%)	31 (59.62%)	32 (66.67%)	p>0.05			
T2DM Family History (%)	42 (80.77%)	41 (85.42%)	p>0.05			
BMI (kg/m2)	28.13 ± 5.12	27.48 ± 5.07	p>0.05	23.48 ± 4.18	27.11± 5.11	P<0.000
Outcome						
Urine albumin (mg/g)	144.2 ± 11.6	142.8 ± 12.9	p>0.05	57.1 ± 8.3	138.5 ± 11.7	P<0.000
eGFR (ml/min/1.73 m2)	65.1 ± 10.4	64.8 ± 9.9	p>0.05	77.1 ± 10.3	61.5 ± 13.3	P<0.000
HbA1c (%)	8.8 ± 1.2	8.7 ± 1.1	p>0.05	6.1 ± 1.2	7.3 ± 1.6	P=0.01