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## **Frailty Prevalence and Short-Term Outcomes Among Younger End-Stage Renal Disease Patients on Maintenance Hemodialysis**

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**Objectives :** This study aims to estimate the prevalence of frailty among younger (18-64 years old) End-Stage Renal Disease (ESRD) patients on maintenance hemodialysis using the Edmonton Frail Scale (EFS) and its association with short-term outcomes: hospital consultations, use of emergency room services, hospitalizations, and mortality.

**Methods :** A prospective single-center cohort study was conducted. All ESRD patients aged 18-64 years old on maintenance hemodialysis on an outpatient basis were included. Data collection included the patients' demographic data, underlying diseases, comorbid conditions, body mass index, and recent laboratory results. The EFS was administered during the first month of the study, and patients were then monitored for consultations, use of emergency room services, hospitalizations, and mortality in the succeeding months until the end of the study period.

**Results :** Out of 166 ESRD patients, 94 belong to the younger age group and 87 patients were included: 33 (37.9%) were frail, 21 (24.1%) were vulnerable, and 33 (37.9%) were fit. Chronic Glomerulonephritis was the leading cause of ESRD in the younger population, and Diabetic Nephropathy was the primary cause among those categorized as frail. Hypertension was the predominant comorbid condition across all categories. Frail patients had the greatest number of hospital consultations (54%) and had frequent utilization of emergency room services. They also exhibited the highest number of hospitalizations consisting 69% of the total admissions across all categories. All deaths in this study came from the patients categorized as frail.

**Conclusions :** Frailty is prevalent among younger ESRD patients on maintenance hemodialysis and is associated with increased risk for hospital consultation, use of emergency room services, hospitalization, and mortality. It is important to reinforce identification of these younger frail hemodialysis patients to implement appropriate corrective and preventive measures for better outcomes.

IMAGE1.jpg

Characteristics	Fit (n = 33)	Vulnerable (n = 21)	Frail (n = 33)	Total (N=87)	Not Frail vs. Frail
	Frequency (%), Mean +/- Standard Dev.				P-value
Age (mean +/- std dev)	48.42 +/- 8.68	48.24 +/- 9.81	51.61 +/- 9.83	49.59 +/-10.5	0.043
<b>Gender</b>					
Male	15 (17.2%)	12 (13.8%)	17 (19.5%)	44 (51%)	0.738
Female	18 (20.7%)	9 (10.3%)	16 (18.4%)	43 (49%)	0.239
BMI (mean +/- std dev)	22.47 +/- 3.67	21.12 +/- 3.65	22.08 +/- 5.16	22 +/-4.28	0.989
<b>Causes of End-Stage Renal Disease</b>					
Bilateral Staghorn Calculi	2 (2.3%)	2 (2.3%)	0	4 (5%)	0.999
Chronic Glomerulonephritis	12 (13.8%)	10 (11.5%)	10 (11.5%)	32 (37%)	0.029
Chronic Interstitial Nephritis	1 (1.1%)	0	0	1 (1%)	0.999
Crescentic Glomerulonephritis	1 (1.1%)	0	0	1 (1%)	0.999
Diabetic Nephropathy	9 (10.3%)	3 (3.4%)	17 (19.5%)	29 (33%)	0.041
Hypertensive Nephrosclerosis	6 (6.9%)	4 (4.6%)	5 (5.7%)	15 (17%)	0.005
IgA Nephropathy	0	1 (1.1%)	0	1 (1%)	0.999
Lupus Nephritis	1 (1.1%)	0	0	1 (1%)	0.999
Polycystic Kidney Disease	1 (1.1%)	1 (1.1%)	1 (1.1%)	3 (3%)	0.991
Months on Hemodialysis	46.24 +/- 44.13	37.05 +/- 27.92	57.12 +/- 78.96	48.15 +/-57.34	0.009
<b>Comorbidities</b>					
Hypertension	19 (21.8%)	16 (18.4%)	25 (28.7%)	60 (69%)	0.005
Diabetes Mellitus Type II	9 (10.3%)	5 (5.7%)	16 (18.4%)	30 (34%)	0.537
Heart Disease	9 (10.3%)	5 (5.7%)	11 (12.6%)	25 (29%)	0.841
Bronchial Asthma	-	-	1 (1.1%)	1 (1%)	0.999
Thyroid Disease	2 (2.3%)	1 (1.1%)	3 (3.4%)	6 (7%)	0.999
Rheumatologic Disease	1 (1.1%)	2 (2.3%)	3 (3.4%)	6 (7%)	0.126
Chronic Hepatitis C	3 (3.4%)	2 (2.3%)	6 (6.9%)	11 (13%)	0.073
Chronic Hepatitis B	1 (1.1%)	1 (1.1%)	3 (3.4%)	5 (6%)	0.18
Stroke	1 (1.1%)	1 (1.1%)	2 (2.3%)	4 (5%)	0.999
<b>Laboratories</b>					
White blood cell count	6.24 +/- 1.75	7.04 +/- 2.32	7.25 +/- 2.09	6.82 +/-2.06	0.455
Hemoglobin	11 +/- 8.01	9.05 +/- 1.3	9.22 +/- 1.13	9.85 +/-5.06	0.394
Hematocrit	27.98 +/- 4.31	26.58 +/- 4.05	27.81 +/- 3.36	27.58 +/-3.91	0.594
Platelet count	203.97 +/- 60.61	189.95 +/- 71.49	189.33 +/- 71.47	195.03 +/- 67.12	0.934
Total Calcium	9.04 +/- 1.15	8.77 +/- 1	9.14 +/- 1.2	9.01 +/-1.13	0.912
Phosphorus	5.25 +/- 1.72	6.48 +/- 2.11	5.39 +/- 2.02	5.6 +/-1.98	0.999
HBs-Ag (Reactive)	1 (1.1%)	1 (1.1%)	3 (3.4%)	5 (6%)	0.432
Anti-HCV (Reactive)	3 (3.4%)	2 (2.3%)	6 (6.9%)	11 (13%)	0.943

IMAGE1.jpg

Outcomes and Causes	Fit (n = 33)	Vulnerable (n = 21)	Frail (n = 33)	Total (N=87)	Not Frail vs. Frail
	Frequency (%), Mean +/- Standard Dev.				P-value
<b>Hospital Consultations</b>					
Angina	3(3.4%)	3(3.4%)	3(3.4%)	9 (10%)	0.032
Pulmonary Congestion	-	1(1.1%)	4(4.6%)	5 (6%)	0.022
Hypertensive Urgency	1(1.1%)	2(2.3%)	5(5.7%)	8 (9%)	0.537
Upper Respiratory Tract Infection	3(3.4%)	2(2.3%)	2(2.3%)	7 (8%)	0.005
Odontalgia and Other Dental Problems	-	1(1.1%)	-	1 (1%)	0.999
Pneumonia	3(3.4%)	5(5.7%)	11(12.6%)	9 (10%)	0.03
Bronchial Asthma	-	-	2(2.3%)	2 (2%)	0.999
Pulmonary Tuberculosis	-	-	1(1.1%)	1 (1%)	0.999
Skin and Soft Tissue Infection	5(5.7%)	4(4.6%)	5(5.7%)	14 (16%)	0.008
Gastroenteritis	2(2.3%)	1(1.1%)	8(9.2%)	11 (13%)	0.001
Gastrointestinal Bleeding	-	-	1(1.1%)	1 (1%)	0.999
Vascular Access Infection	-	4(4.6%)	-	4 (5%)	0.999
Insomnia	-	-	2(2.3%)	2 (2%)	0.999
Peripheral Neuropathy	-	-	1(1.1%)	1 (1%)	0.999
Urinary Tract Infection	-	-	1(1.1%)	1 (1%)	0.999
Musculoskeletal Problems	2(2.3%)	5(5.7%)	11(12.6%)	8 (9%)	0.004
Gynecologic Problems	-	1(1.1%)	-	1 (1%)	0.999
<b>Total Number of Consultations</b>	19 (18.1%)	29 (27.6%)	57 (54.3%)	105	0.019
<b>Hospitalizations</b>					
Hematologic Diseases	-	1(1.1%)	1(1.1%)	2 (2%)	0.999
Pulmonary Diseases	-	2(2.3%)	1(1.1%)	3 (3%)	0.899
Cardiovascular Diseases	-	-	4(4.6%)	4 (5%)	0.999
Infectious Diseases	1(1.1%)	1(1.1%)	1(1.1%)	3 (3%)	0.989
Oncologic Diseases	-	-	1(1.1%)	1 (1%)	0.999
Neurologic Diseases	-	-	2(2.3%)	2 (2%)	0.999
Gastrointestinal Diseases	-	-	1(1.1%)	1 (1%)	0.999
<b>Total Number of Admissions</b>	1(1.1%)	3(3.4%)	9(10.3%)	13 (15%)	0.001
<b>Length of Stay (LOS)</b>	6	6.25 +/- 4.99	6.09 +/- 4.48	6.13 +/-4.29	0.999
<b>Hospital Services Availed</b>					
Nebulization	-	-	2(2.3%)	2 (2%)	0.999
Wound Care	3(3.4%)	5(5.7%)	4(4.6%)	12 (14%)	0.029
<b>Mortality</b>					
Massive Upper Gastrointestinal Bleeding	-	-	1(1.1%)	1 (1%)	0.999
Myocardial Infarction	-	-	1(1.1%)	1 (1%)	0.999
Acute Decompensated Heart Failure	-	-	1(1.1%)	1 (1%)	0.999