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## **Frailty in CKD stage-v maintaining hemodialysis patients based on edmonton frail scale**

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**Abstract**---AIM: The aim of the study is to assess the frailty in CKD Stage V maintaining Hemodialysis” patients Based on “EDMONTONFRAILSACLE”. To assess the frailty level among ESRD patients maintaining hemodialysis. By using“ EDMONTONFRAIL SCALE”. STUDY DESIGN: The participant will be included in the study based on their Inclusion and exclusion criteria after obtaining informed consent. The study is an analysis of the Cognition, General health status, Functional independence, Social support, Medication use, Nutrition, Mood, Continenence, Functional performance. PLACE AND DURATION OF THE STUDY: The study was conducted at Department Of Nephrology .Sri Ramachandra Institute of Higher Education and Research (DU). Period of the study: 3months. METHODOLOGY: A Patient who are all undergoing hemodialysis increases the frailty level. It helps to find the frailty related to hemodialysis patients. It helps to assess early railyty in physical and mental l status. The participant will be included in the study based on their Inclusion and exclusion criteria after obtaining informed

consent. The study is an analysis of the Cognition, General health status, Functional independence, Social support, Medication use, Nutrition, Mood, Continence, Functional performance. Ascoring level:

0-5 = not frail, 6-7 = vulnerable 8-9 = mild frailty 10-11 = moderate frailty, 12-17 = severe frailty. RESULTS:

Frequency and percentage distribution of participant based on background Variables. In this study majority 60.0% (n=60) of the participants were in the age group of >55 years, most 71.0% (n=71) of them were males, and majority 84 % (n=84) of them had Hypertension (HTN) as comorbidity and In this study frequency and percentage distribution of the participants based on level of frailty in CKD Stage-V maintaining Hemodialysis patients. It revealed that, majority 38.0% (n=38) of the patients showed severe frailty, around 21% (n=21) of them showed moderate frailty, about 26% of them showed mild frailty, 11 % (n=11) of them were vulnerable and only 4.0% of the m were not frail. In this study the comparison of levels of hemoglobin, calcium, albumin and Kt/V with Level of frailty in CKD Stage-V maintaining Hemodialysis patients. One-way ANOVA was computed to find the significant mean difference of clinical parameters with level of frailty. It revealed that, there is a gradual decrease in the mean levels of clinical parameters (hemoglobin, calcium, albumin and Kt/V) from no frailty to severe frailty and it also found that there is mean difference between the levels of frailty with clinical parameters. But, only for hemoglobin (g./dL) values statistically significant mean difference was between the level of frailty ( $p < 0.05$ ). For other parameters the mean difference was not statistically significant ( $p > 0.05$ ). CONCLUSION: In this study, we conclude that severity of frailty was higher in Hypertensive male hemodialysis patients. Elder patients above >55 years on maintaining hemodialysis have severe frailty level than other young age group. Edmonton frail scale is as implead a valid too analyses the frailty in patients on maintenance hemodialysis.

**Keywords**---hemodialysis, patients, CKD, haemoglobin, calcium, albumin.

## Introduction

Chronic kidney disease (CKD) is a global public health problem with a rising prevalence. Low glomerular filtration rate is linked to an increased risk of kidney failure requiring dialysis, as well as cardiovascular disease (CVD), hypertension, anemia, and other metabolic complications. A coordinated world-wide approach to prevention of adverse outcomes through defining the disease and its outcomes, estimating disease prevalence, identifying earlier stages of disease and antecedent risk factors, and detection and treatment for populations at increased risk for adverse outcomes. [1] Chronic Kidney Disease (CKD) is defined as the presence of kidney damage (usually detected as urinary albumin excretion of 30 mg/day or more or equivalent) or GFR below 60 mL/min/1.72 m<sup>2</sup> measured at least 90 days apart and not due to a transient condition, which satisfies the definition of CKD.

The persistence of the damage or decreased function for at least three months is necessary to distinguish CKD from acute kidney disease.

According to the Kidney Disease Outcomes Quality Initiative, CKD is divided into five stages based on the estimated GFR value. Stage 3CKD is divided further into 2 sub-stages A and B, to underline the increased cardiovascular risk and risk of CKD progression at lower eGFR values. Patients with stage 3A CKD are considered to be at low risk for progression to kidney failure, while patients in stages 3B and 4 are considered to be at high risk for progression to kidney failure. [2-3] In broad terms, the process of dialysis involves the bidirectional movement of molecules across a semi permeable membrane. Clinically, this movement takes place in and out of the bloodstream, across a semi permeable membrane. If the blood is exposed to an artificial membrane outside of the body, the process is called haemodialysis (HD). If the exchange of molecules occurs across the peritoneal membrane, the process is called peritoneal dialysis (PD). [4-5]

## **Material and Methods / Experimental Details / Methodology**

### **Peritonealdialysis**

Peritoneal dialysis: is one of the methods of renal replacement therapy. It removes metabolic waste products from the blood by diffusive, convective transport and osmosis through the highly vascularized peritoneal membrane. Here, the patient's own peritoneum acts as a semipermeable membrane which allows selected particles to pass through the peritoneal membrane. [6] The aim of the study is to assess the frailty in ckd-maintaining haemodialysis patients based on the edmonton frailty scale and to assess the frailty level among esrd patients maintaining haemodialysis. By using the "edmontonfrail scale".

### **Materials and Methods**

#### **Sample Area**

the study was conducted at department of nephrology. Sri rama Chandra institute of higher education and research (du).

Sample size: 100patients.

Type of the study: observational study.

Period of the study: 3months.

#### **Inclusion criteria**

Age: 35-80 years.

ESRD patients undergoing hemodialysis

Patients who are willing to give informed consent

#### **Exclusion criteria**

Acute kidney injury (aki).

Peritoneal dialysis patients.

Renal transplant patients.

## Methodology

The participant will be included in the study based on their inclusion and exclusion criteria after obtaining informed consent. The study is an analysis of the following: cognition, general health status, functional independence, social support, medication use, nutrition, mood, continence, and functional performance.

Ascoring level: 0-5 = not frail

67 indicate vulnerability, while 8-9 indicates mild frailty.

10-11 = moderate frailty

12-17= severe frail

Ascoringlevel: 0-5=not frail

67=vulnerable8-9=mild frailty

10-11=moderate frailty

12-17=sever frailty

## Need of the study

Patients undergoing haemodialysis all have a higher frailty level.to find the frailty related to haemodialysis patients. It helps to assess early frailty in physical and mental status.

## Statistical Analysis

The results of the study will be analysed using spas Software. The data will be expressed in percentage, mean, and standard deviation. A p value of 0.05 will be considered statistically significant. [7-9].

## Results and Discussion

Frequency and percentage distribution of participant based on background Variables.

Table 1  
Age distribution

Ageing years	Frequency (f)	Percentage (%)
46-55years	31	31.0
>55years	60	60.0
Gender		
Male	71	71.0
Female	29	29.0
Co-morbidities		
DMandHTN	11	11.0
HTN	84	84.0
No	5	5.0

Table 2  
Level of frailty in CKD Stage-V maintaining Hemodialysis patients

Level of frailty	Frequency (f)	Percentage (%)
Notarial	4	4.0
Vulnerable	11	11.0
Mild frailty	26	26.0
Moderate frailty	21	21.0
Sever frailty	38	38.0

Table 3  
Comparison of levels of haemoglobin, calcium, albumin and Kt/V with Level of frailty in CKD Stage-V maintaining Hemodialysis patients

Clinical Variables	Level Of Frailty					One-a F) Anova p and F – values & P-value
	No Mean±SD	Vulnerable Mean±SD	Mild Mean±SD	Moderate Mean±SD	Severe Mean±SD	
Haemoglobin (mg/dL)	9.72±0.72	8.75±1.95	9.03±1.68	8.98±1.84	8.73±1.86	F=0.35 &p=0.83 (NS)
Calcium (mg/dL)	8.75±0.99	7.85±1.09	7.68±1.32	7.35±1.19	6.34±1.25	F=7.91 &p=0.001(S)
Albumin (gm/dL)	3.97±0.45	3.31±0.55	3.53±0.54	3.45±0.45	3.36±0.58	F=1.50 &p=0.20 (NS)
Kt/V	1.30±0.47	1.10±0.35	0.95±0.44	1.05±0.51	0.87±0.34	F=1.33 &p=0.26 (NS)

(P<0.05Significnatlevel), S: Significant, NS: Non-significant

## Discussion

Patients with ESKD have a greater prevalence of frailty using a variety of scales compared with the general population, and this appears to start as renal function declines. Frailty in ESKD patients has been associated with an increased risk of morbidity and mortality. Moderate to severe frailty as assessed by the Clinical Frailty Scale (CFS) has also been associated with reduced kidney transplantation. In spite of the importance of frailty, the most clinically meaningful method to assess it remains unclear. A frailty measurement should be able to predict adverse clinical events and patient responses to therapies but also be easy to use for research and/or clinical patient management. Therefore, we aimed to determine the usefulness of the FRAIL questionnaire by embedding it within an exercise survey and assessing outcomes of relevance, including mortality, kidney transplantation, and hospitalization in ESKD patients treated with dialysis. Impaired physical function, sarcopenia, and an increased risk of falls are hallmarks of the frailty syndrome. Throughout all stages of CKD, these factors may be accelerated. The interplay between frailty, aging, and CKD has been termed "senescent nephropathy," a state characterized by a synergistic decline in

physical and renal function, proposed to be caused by increased levels of inflammation associated with each condition.

In addition to CKD itself, it is possible that the treatments offered to frail CKD patients may also accelerate declining health. Strict targets for blood pressure, glycemic control, and salt and protein intake, while proven to be beneficial in fit patients with CKD, may, in fact, accelerate the decline of frail patients. Frailty carries with it a similar risk of mortality and morbidity as CKD, and as such, initiation of treatment should include careful consideration of what impact the proposed therapy may have on the patient's frailty status and severity. In addition, therapies with expected benefits in the longer term may not occur in a timeframe that is relevant for frail and elderly patients and only add potential harm. [10-12]. While life-sustaining, dialysis is associated with significant morbidity. Cramping, pruritus, intradialytic hypotension, access-site complications, and post-dialysis fatigue are major symptoms that can all significantly have an impact on a patient's quality of life. Although data is limited, frail patients appear to be more vulnerable to complications, likely owing to their diminished reserve. Frail patients who are started on HD appear to do so at a higher GFR than their non-frail counterparts.

The reason perhaps some frailty-associated symptoms are misinterpreted by the patient and provider as uremic symptoms, or perhaps by virtue of being frail, these patients are less tolerant of uremia and experience it at a higher GFR. Regardless, this is a worrisome trend, as there has been a suggestion that dialysis itself may accelerate the progression of frailty. The exact mechanism by which this occurs is not clear but appears to be multifactorial. Senescent nephropathy is associated with decreased physical activity, which may accelerate the process of senescent nephropathy. Intradialytic hypotension has also been implicated, as it appears to have deleterious effects on cardiovascular and cerebral functioning, adding to the deficit burden. While there is no consensus on the definition of frailty, it is currently recognized that frailty is an age-associated status of reduced resilience and increased vulnerability to stressful situations, characterized by weakness and lower biological functional reserves, which entails a higher risk of unfavorable outcomes such as disability, hospitalization, and death. Although it is closely related to sarcopenia, dependence, comorbidity, and disability and these situations influence each other, they do not always coexist. Although frailty was initially defined as associated with aging, situations have been described, such as chronic kidney disease, which may not only increase its prevalence at advanced ages, but also result in an earlier onset. [13-18]

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mortality and morbidity as CKD, and as such, initiation of treatment should include careful consideration of what impact the proposed therapy may have on the patient's frailty status and severity. In addition, therapies with expected benefits in the longer term may not occur in a timeframe that is relevant for frail and elderly patients and only add potential harm.

Large differences in the prevalence of frailty in hemodialysis patients found in previous studies may be due to several reasons, such as differences in the study populations in terms of age, morbidity, and inclusion of prevalent or incident patients. However, they may also be due to differences in the methods used to detect frailty. In general, three frailty-detection tests are used: those based on the description of a frail phenotype through physical tests, such as the one described by Fried; those based on subjective assessment scales, such as the Frailty Score developed; and multi-domain tools that explore various frailty dimensions such as cognitive state, degree of dependence, psychological dimension, social support, or physical dimension. [19–20]. In this study, the majority of 60.0% (n = 60) of the participants were in the age group of > 55 years, most 71.0% (n = 71) of them were males, and a majority of 84.0% (n = 84) of them had hypertension (HTN) as a co-morbidity, as per mentioned in table No.1. In this study, the frequency and percentage distribution of the participants were based on the level of frailty in CKD Stage-V maintaining hemodialysis patients. It was discovered that the majority of the patients (n = 38) had severe frailty, 21% (n = 21) had moderate frailty, 26% (n = 26) had mild frailty, and 11% (n = 11) were vulnerable.

According to table No.2, only 4.0% of the m was not frail. In this study, the comparison of levels of haemoglobin, calcium, albumin, and Kt/V with the level of frailty in CKD Stage-V maintaining hemodialysis patients was made. One-way ANOVA was computed to find the significant mean difference in clinical parameters with the level of frailty. It revealed that there is a gradual decrease in the mean levels of clinical parameters (haemoglobin, calcium, albumin, and Kt/V) from no frailty to severe frailty, and it was also found that there is a mean difference between the levels of frailty and clinical parameters. But, only for haemoglobin (g./dL) values, a statistically significant mean difference was found between the levels of frailty ( $p < 0.05$ ). For other parameters, the mean difference was not statistically significant ( $p > 0.05$ ). As per mentioned in table No.3, when compared with other studies, older age and female sex have been associated with frailty.

In univariate analysis, we were unable to show a statistically significant difference in these demographic factors, but this may be related to the overall study numbers. On average, frail patients were 66.7 years old, compared with 59.5 years for non-frail patients. Similarly, 46% and 34% of frail and non-frail participants, respectively, were women. Employment status did differ, with frail patients being more likely to be on disability or retired compared with non-frail patients, similar to other studies. Ethnicity was also different between frail and non-frail patients. This has previously been demonstrated in the general population<sup>16</sup> and may be related to intrinsic genetic factors, but there may also be cultural differences in the maintenance of daily living activities or dietary preferences that lead to nutritional deficiencies that predispose certain

populations to becoming frail. Frailty, defined by the FRAIL questionnaire and CFS, has been associated with hypoalbuminemia.[21-22].

## Conclusion

We conclude that the severity of frailty was higher in hypertensive male haemodialysis patients. The Fried phenotype with or without changes was the most prevalent strategy for quantifying frailty in CKD patients, followed by the FRAIL scale and the Edmonton frail scale. Depression, disability, hypoalbuminemia, and low testosterone levels are all contributors to frailty in CKD patients. Frailty is linked to eventual CKD consequences such as cardio metabolic, musculoskeletal, and cerebral illnesses, mental distress, functional and QoL impairment, excessive healthcare use, and increased mortality. Given the multitude of frailty-related negative effects, frailty-reducing therapy should be beneficial to CKD patients. The Edmonton Frailty Scale is also valid for evaluating the frailty of patients on maintenance haemodialysis.

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