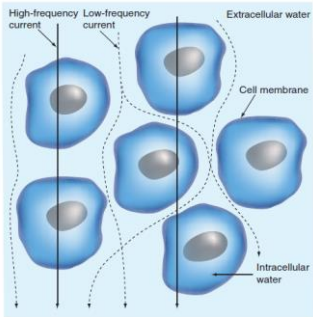


IS OLD STILL WORTH ITS WEIGHT IN GOLD? COMPARISON OF THE EFFECT OF BIOIMPEDANCE VERSUS CLINICAL ASSESSMENT ON SHORT-TERM OUTCOMES OF VOLUME ASSESSMENT IN MAINTENANCE HEMODIALYSIS PATIENTS

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INTRODUCTION

- **Volume Assessment:** Important since the time HD became a modality of RRT.
- **Volume Overload/Depletion:** Associated with increased cardiovascular morbidity and mortality.
- Traditionally: Clinical examination: **Subjective**
- Recently: Bioimpedance: **Objective**
- However, each method has its own set of limitations and hence a comparison needs to be made.

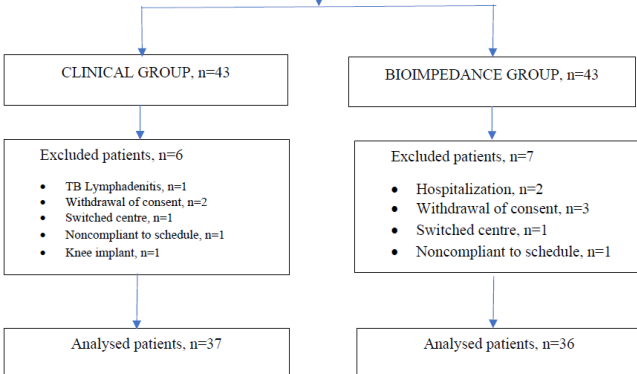


OBJECTIVES AND METHODOLOGY

- **To compare the difference** in hydration status as well as the episodes of symptomatic volume overload/depletion in ESRD patients on MHD whose dry-weight was adjusted according to either clinical or bioimpedance analysis.
- We included **86 hemodynamically stable ESRD patients** on MHD.
- **Clinical Group:** Dry-weight adjusted based on clinical assessment in one group of patients (n=43).
- **Bioimpedance Group:** Dry-weight adjusted according to the pre-HD bioimpedance, which was done monthly as well as when an episode of symptomatic volume overload/depletion developed (n=43). The patients completing the study period were taken up for statistical analysis.
- **Exclusion Criteria:** Active malignancy, pacemaker implantation, limb amputation, and metallic implants, as these can affect bioimpedance analysis.

RESULTS

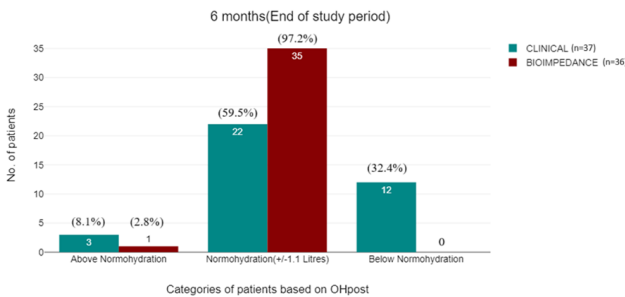
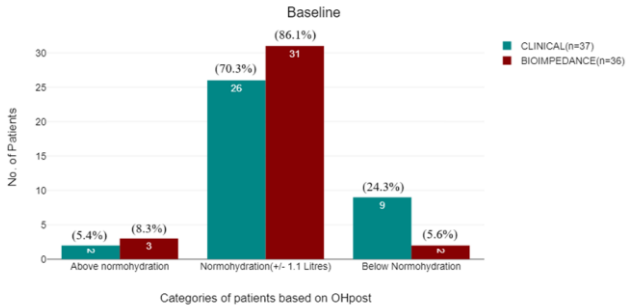
ENROLLED PATIENTS, N=86



Confounding factors like anemia, cardiac function, nutrition, dialysis adequacy(Kt/V), and frequency of dialysis were comparable between two groups.

	Clinical Group	Bioimpedance Group
Age (Mean)	57.4 yrs	59.5 yrs
NKD (most common)	17(46%)	17(47%)
Comorbidity (most common)	21(57%)	20(56%)

		Baseline		6 months		Wilcoxon Sign Rank Test
		Median	IQR	Median	IQR	
Clinical group	Systolic BP (mm Hg)	150	140-160	146	144-150	W=233.5 (p=0.776)
	Diastolic BP (mm Hg)	90	88-90	88	82-90	W=154 (p=0.064)
Bioimpedance group	Systolic BP (mm Hg)	148	140-156	141	138-148	W=159.5 (p=0.018*)
	Diastolic BP (mm Hg)	84	82-90	80	80-84	W=158 (p=0.125)



SYMPTOMATIC VOLUME OVERLOAD

Parameter	Clinical Group	Bioimpedance Group	Mann Whitney U Test
Episodes (Total)	16	19	U=622
Episodes/patients/6 months	0.43	0.53	(p=0.632)
Episodes needing revision of dry weight	13	15	U=614.5
Episodes/patient/6 months	0.35	0.42	(p=0.575)

SYMPTOMATIC VOLUME DEPLETION

Parameter	Clinical Group	Bioimpedance Group	Mann Whitney U Test
Episodes (Total)	78	62	U=602
Episodes/patient/6 months	2.11	1.72	(p=0.485)
Episodes needing revision of dry-weight	28	29	U=645.5
Episodes/patient/6 months	0.76	0.81	(p=0.826)

CONCLUSION

- A statistically significant **reduction of systolic BP in the bioimpedance group** at the end of the study period as compared to the baseline.
- The proportion of patients in the **normohydration (+/- 1.1 liter) range in the bioimpedance group was significantly higher** than the clinical group at the end of the study period.
- **However**, the number of **episodes** of symptomatic volume overload/depletion as well as the proportion of patients developing these episodes **did not differ** significantly between the two groups. This can be attributed to the regular clinical examination.
- **Take-home message:** India has one of the lowest nephrology workforce densities worldwide. Hence, in dialysis centers where clinician rounds do not happen regularly, periodic bioimpedance can be a **useful tool** for the assessment and management of dry-weight.