



# EFFECT OF COUNSELLING ON INTER-DIALYTIC WEIGHT GAIN AMONGST HAEMODIALYSIS DEPENDENT PATIENTS

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## ABSTRACT

**Objective:** Aim of current study was to determine the effect of counselling on inter-dialytic weight gain amongst haemodialysis dependent patients.

**Study Design:** Randomized controlled trial

**Place and Duration:** This study was conducted at Nephrology Department of Combined Military Hospital, Peshawar, and the duration of this study was from 01 August 2021 to 31 January 2022.

**Methods:** Total 110 patients of End Stage Renal Disease on maintenance haemodialysis having 2-3 sessions per week were enrolled. Patients were equally divided in two groups. In group I, 55 patients



were counseled to restrict fluid intake for 6 months and in group II, 55 patients were not counseled. Interdialytic weight gain before and after counselling was assessed among both groups.

**Results:** Majority of the patients 63 (57.3%) were males and 47 (42.7%) were females. Average age of the included patients was  $57.6 \pm 17.67$  years and had mean BMI  $24.7 \pm 10.29$  kg/m<sup>2</sup>. Mean duration of dialysis was  $19.6 \pm 3.55$  months. Hypertension and DM were the most common etiologies among all cases. In group I before counselling IDW was  $3.2 \pm 1.16$  kg, after 3 months IWG was  $2.9 \pm 5.57$  kg and after final follow up IWG was  $2.61 \pm 7.35$  kg and in group II baseline IDW was  $3.5 \pm 9.29$  kg, after 3 months  $3.7 \pm 5.88$  kg and after 6 months  $3.9 \pm 3.97$  kg. Significantly reduction in hyperkalemia was seen in group I with  $p < 0.003$  as compared to group II while there was no any difference observed in serum albumin level and hyperphosphatemia among both groups.

**Conclusion:** Our findings suggest that providing patients on maintenance hemodialysis with active nutritional advice and counseling can assist these patients with fluid overload and hyperkalemia.

**Keywords:** Inter-Dialytic Weight Gain, Counseling, End Stage Renal Disease, Haemodialysis

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## INTRODUCTION

It is recommended that the inter dialytic weight gain (IDWG) between dialysis not exceed 4.5–5% of the original dry weight [1]. Sadly, a high number of patients have an IDWG that is greater than 5% [2]. High intraday intravenous glucose levels have been linked to large increases in morbidity and death, including ventricular hypertrophy and major adverse cardiac and cerebrovascular events [3, 4]. Because of this, additional dialysis sessions are necessary, which decreases the quality of life and considerably drives up the cost of healthcare. The biggest contributor to high IDWG is an abundance of both food and liquids in one's diet. Patients do not adhere to the prescribed food and fluid intake restrictions in more than sixty percent of the assessments [4,5]. Research has found that there is a correlation between a number of factors and inadequate adherence to food and fluid restrictions. The inability to accurately identify fluid status as well as salt and fluid intakes [4,5] plays a key role in this regard. A lack of drive and an inaccurate self-assessment also play a role in this regard.

Because of the complexity of this parameter, several other factors in addition to the behavioral measurements mentioned above have been considered as HD compliance markers. These factors include interdialytic weight gain (IWG), serum potassium and phosphate levels, patient intake of proteins

measured by protein catabolic rate (PCR), and adequacy of dialysis treatment. Unfortunately, it's possible that all of these qualities could be influenced by factors that have nothing to do with adhering to nutritional and medical guidelines. Their measurements are extremely sensitive to a variety of parameters, including residual renal function, the kind of dialysis utilized, drugs, and drug interactions [6-8]. It is unknown what function IWG plays in survival, however one sign of compliance is the amount of weight gain that occurs between examinations. This weight gain may be influenced in part by patient behavior. A recent study indicated that HD patients with an intersession IWG of 5.7% or higher had a 35% higher risk of death, which was higher than the risk of death associated with missing or abbreviated HD sessions. In addition, this risk of death was higher than the risk of death associated with HD patients receiving shorter HD sessions.[9]

Patients diagnosed with end-stage renal disease (ESRD) who are receiving haemodialysis have their medical risk factors for death thoroughly evaluated and analyzed. Age, gender, race or ethnicity, status of diabetes mellitus, serum albumin levels, dialysis dose, and the existence of co-morbid conditions are a few of the criteria that go into this calculation. The vast majority of these have additionally been connected to IWG. It has not been established if the presence

of diabetes mellitus in this population is related to the unfavorable effects of IWG [10,11]. Even though patients in Asian nations may have different dietary practices, nutritional status, and dialysis practice patterns than patients in Western countries, there is still a significant amount of practical value in researching the predictive influence of IDWG in incident HD patients in Asian countries. In the final analysis of the prior research, other parameters that are highly related with IDWG and survival of HD patients [12,13] were not included. These indicators include the volume of urine passed in 24 hours, inflammatory biomarkers, and the amount of renal function that is still present. The current study was carried out by us in order to gain a deeper comprehension of the predictive effectiveness of IDWG in incident Korean HD. We sought to investigate whether, in addition to providing patients with the best possible medical care, active nutritional counselling provided by a renal dietitian may improve patients' fluid overload, hyperkalemia and other biochemical nutritional markers.

**MATERIALS AND METHODS**

This randomized control trial was conducted at Nephrology Department of Combined Military Hospital, Peshawar and the duration of this study was from 01 August 2021 to 31 January 2022. This study comprised of 110 patients of End Stage Renal Disease on maintenance haemodialysis. After obtaining informed written consent, detailed

demographics included age, sex, BMI, duration of disease and duration of dialysis were recorded. Patients <30 years of age, heart failure and those did not provide any written consent were excluded.

Patients' demographic data (gender, age, level of interest in and understanding of nutrition and hydration) was gathered via questionnaire. Patients with low albumin levels, high potassium levels, high phosphate levels, and rapid weight increase between visits were identified. Two sets of patients were studied separately. Active nutritional counseling (discussion of dietary and hydration limitations with the use of charts twice weekly) was provided to patients in group I by dietician in addition to the nephrologist's optimal medical therapy. We took no action in Group II. There was a general upward trend in these patients' nutritional indicators and inter-dialytic fluid gains during the course of the trial. All data was analyzed using SPSS 22.0. For categorical variables, we employed frequency and percentage distributions. For comparing results, we utilized the Students T test, and for summarizing them, we calculated the mean and standard deviation.

**RESULTS**

Majority 63 (57.3%) males and 47 (42.7%) females among all cases. Average age of the included patients was 57.6±17.67 years and had mean BMI 24.7±10.29 kg/m<sup>2</sup>. Mean duration of dialysis was 19.6±3.55 months. (Table 1)

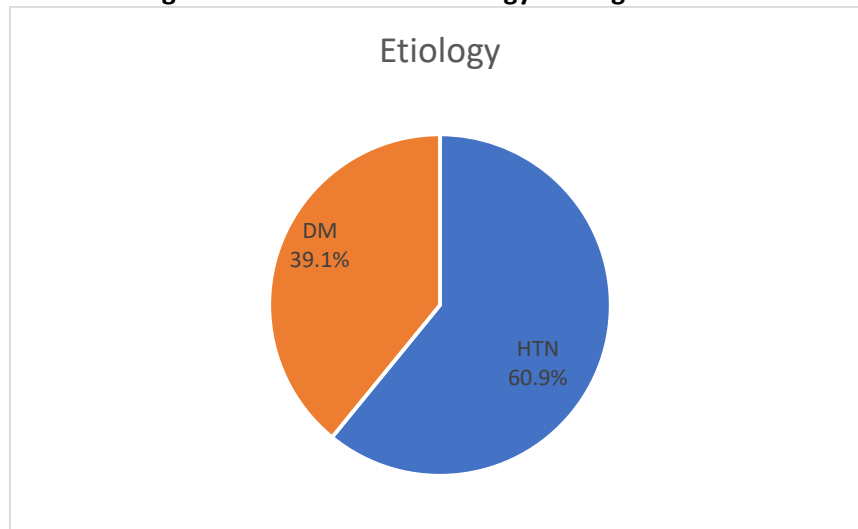
**Table-1: The Cases Enrolled and Their Characteristics**

Variables	Frequency	Percentage
<b>Gender</b>		
Male	63	57.3
Female	47	42.7
Mean age (years)	57.6±17.67	
Mean BMI (kg/m <sup>2</sup> )	24.7±10.29	
Mean Duration of dialysis	19.6±3.55	

Hypertension and DM were the most common etiologies among all cases. (Figure 1)



**Figure-1: Association of Etiology Among All Cases**



In group I before counselling IDW was 3.2±1.16 kg, after 3months IWG was 2.9±5.57 kg and after final follow up IWG was 2.61±7.35 kg and in group II baseline IDW was 3.5±9.29 kg, after 3months 3.7±5.88 kg and after 6months 3.9±3.97 kg. (Table 2)

**Table-2: Comparison of Outcomes Among Both Groups**

IDWG	Group I	Group II	P value
At baseline	3.2±1.16 kg	3.5±9.29 kg	
After 3-months	2.9±5.57 kg	3.7±5.88 kg	0.004
After 6months	2.61±7.35 kg	3.9±3.97 kg	0.002

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Significantly reduction in hyperkalemia was seen in group I with p <0.003 as compared to group II while there was no any difference observed in serum albumin level and hyperphosphatemia among both groups.(Table 3)

**Table-3: Results of Hyperkalemia, Serum Albumin and Hyperphosphatemia**

IDWG	Group I	Group II
<b>At baseline</b>		
Hyperkalemia >6.2	21%	20%
serum albumin <30 g/L	12%	11%
hyperphosphatemia	15%	16%
<b>After final follow up</b>		
Hyperkalemia >6.2	14%	20%
serum albumin <30 g/L	11%	12%
Hyperphosphatemia >1.78mmol/L	14%	15%

**DISCUSSION**

Malnutrition is widespread among those with end-stage renal disease (ESRD) due to the illness's chronic nature and its effects on the

patient's appetite and ability to keep food down. As the disease progresses over a lengthy period of time, the patient may become discouraged and refuse to adhere to the



prescribed diet. It is possible that compliance, and thus nutritional and other clinically significant metrics, can be increased by continually stressing the relevance of different indicators to the patient. Nutritional intervention has been shown to improve outcomes in large multicenter studies, and the evidence suggests that nutritional counseling delivered more frequently improves compliance with the intervention and hence increases the likelihood of positive outcomes [14,15]. ESRD patients have been studied recently, and the results showed that nutritional status can be maintained or improved with dietary counseling and the judicious use of nutritional supplements among those with renal failure [16].

In current study 110 hemodialysis dependent patients were enrolled. Majority 63 (57.3%) males and 47 (42.7%) females among all cases. Average age of the included patients was  $57.6 \pm 17.67$  years and had mean BMI  $24.7 \pm 10.29$  kg/m<sup>2</sup>. Mean duration of dialysis was  $19.6 \pm 3.55$  months. Our findings were inline with the previous researches [17,18]. Furthermore, Lopez- Gomez et al.'s findings that HD patients had a mean age of  $60.6 \pm 14.5$  years contradict our findings [19]. One possible explanation could be that in our country due to financial constraints, inadequate treatment may lead to earlier occurrence of ESRD. The present study found that following patient education, IDWG and hyperkalemia were significantly reduced, however serum albumin level and hyperphosphatemia were not significantly reduced.

HD attendance, length, and episodes of shortening all showed an upward trend in adherence, whereas adherence to fluid and nutrition guidelines showed a statistically significant improvement. High scores were reported for the first three domains of adherence at baseline; this was likely attributable to the fact that the dialysis center being tertiary-level the hospital providing high-quality care and the patients' perceptions of the quality of dialysis. However, patients reported low scores for fluid and dietary compliance due

to a lack of knowledge, myths about foods to be avoided and eaten in caution for their disease condition, and the climatic condition causing it difficult to adhere to these recommendations. Educational intervention was followed by goal setting and cognitive behavior therapy (CBT), and adherence outcome assessment was subjective, i.e., as stated by the patient. Similar to what was done by Brantley's et al., Chen et al., Reese p in al., Kartvelian et al., Kauric Klein, and Wong et al., these researchers used educational intervention and subjective measurements to increase adherence to treatment protocols like vascular access cleaning, protein intake, medication adherence questionnaires, phosphate intake, self-reported blood pressure medication compliance, self-reported dialysis diet, and fluid [20-22].

Patients with ESRD are more likely to experience cardiac arrhythmias due to hyperkalemia than any other metabolic condition. It can result in atrial fibrillation, ventricular and junctional hyperexcitability, and lowering of myocardial contractility. Acute hypotension and a shock-like appearance have been documented in dialysis patients.[23]

In conclusion, our research shows that key nutritional and clinical indicators can be significantly improved through active nutritional counselling. However, the nutritional counselling program should be designed to match the needs of the intended demographic, taking into account the diversity of that community in terms of both education and culture. Getting the patient's loved ones on board with the dietary counselling program may help them see even greater results.

## CONCLUSION

Our findings suggest that providing patients with maintenance HD with active nutritional advice can assist these patients with fluid overload and hyperkalemia.

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