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Introduction

- Interdialytic weight gain (IDWG) and serum sodium levels (SNa⁺) show an inverse relationship in maintenance hemodialysis (HD) patients, possibly related to the dialysate-to-serum sodium gradient and intradialytic sodium loading [1]. Seasonal variations in IDWG (both absolute and relative to body weight) have been established, with lesser IDWG in summer compared to winter [2], while SNa⁺ has been previously shown to have temporal variability in individual HD patients [3] with only a moderate peak during winter [4]. High SNa⁺ levels have been associated with lower mortality risk, while higher IDWG is positively associated with the risk of death [5, 6]. We aim to further understand the relationship between IDWG and SNa⁺ levels through an analysis of seasonal variations of these parameters.

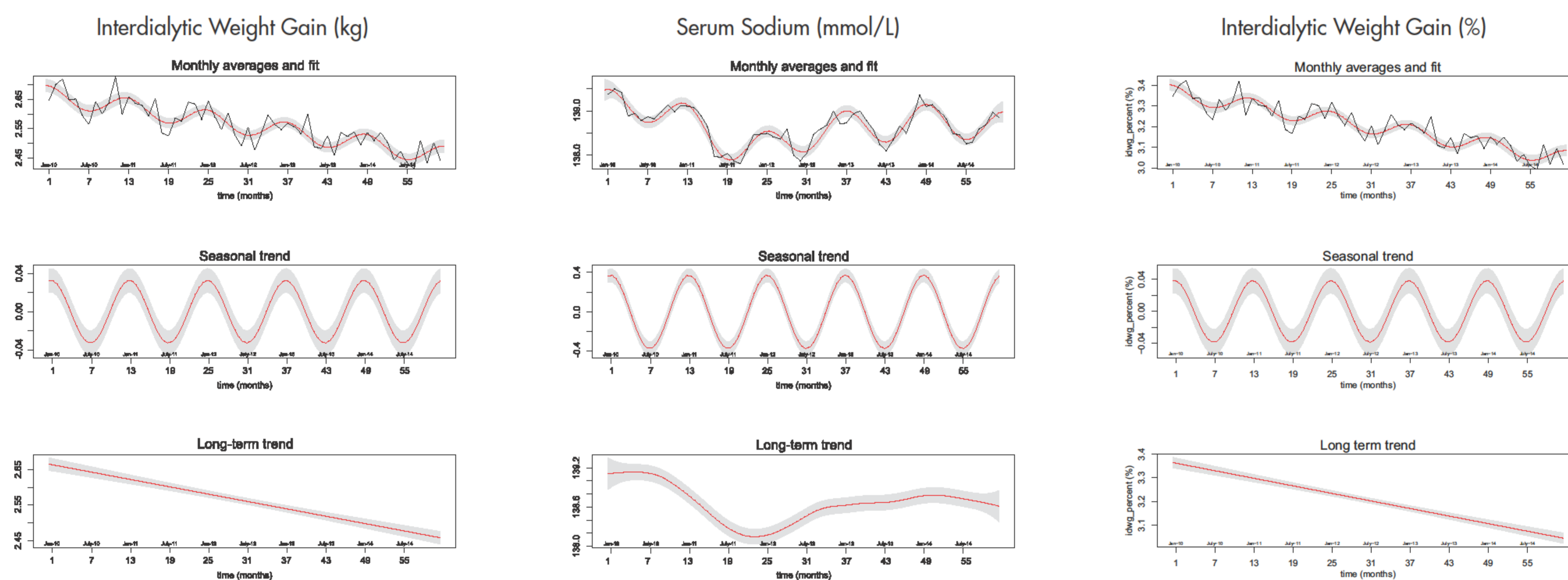
Methods

- All patients receiving HD in Fresenius Medical Care North America (FMC NA) clinics from 1/2010 to 12/2014 were included in this analysis. Both the seasonal trend and long-term trends were estimated together using partial spline models [7]. The plots show an overall fit which includes month (seasonal effect) and year (long term effect), the seasonal trend, and the long-term trend.

Results

- The final sample included 354,572 patients from 2,437 facilities. Mean relative (% of body weight) and absolute IDWG and SNa⁺ exhibit seasonal variations, peaking in January reaching a nadir in July. This finding is consistent over the entire study period.

Seasonal Variation and Trends in Absolute and Relative Interdialytic Weight Gain and Serum Sodium



Conclusion

- These findings confirm previous results of seasonality of IDWG, however provide new insights into the variability of SNa⁺ and leads us to hypothesize on the interrelation between these two parameters. Future studies are needed analyzing to what extent sodium loading is affected by the seasonality of serum sodium and how this may affect the seasonality of IDWG. In addition, the effect of seasons on salt and fluid intake need further exploration.

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