

Association between Nutritional Parameters and Symptom Burden Among Non-Dialysis Chronic Kidney Disease Patients

Michelle M.Y. Wong¹, Yuyan Zheng², Dani Renouf³, Zainab Sheriff¹, Adeera Levin^{1,2}

1. The University of British Columbia, Vancouver, BC, Canada

2. BC Provincial Renal Agency, Vancouver, BC, Canada

2. St. Paul's Hospital, Vancouver, BC, Canada

Introduction

Protein-energy wasting (PEW) and undernutrition are complications of advanced CKD that are associated with increased risk of mortality and morbidity. In British Columbia (BC), symptom burden of kidney care clinic (KCC) patients is routinely assessed through a validated tool, the Edmonton Symptom Assessment Scale (ESAS). The ESAS is administered at KCC visits to patients with an eGFR <15 ml/min/1.73 m². Our aim was to evaluate the associations between readily available nutritional parameters and ESAS sub-scores.

Methods

In this exploratory analysis, we included 1092 non-dialysis CKD patients with eGFR <15ml/min/1.73 m², who entered multidisciplinary KCC in BC during 2013-2018 and had completed the ESAS. Using baseline data within 6 months of entry to the KCC, multivariable linear regression was applied to assess associations between ESAS scores and the following nutritional parameters:

- ◆ Body mass index [BMI]
- ◆ Serum albumin
- ◆ Serum phosphate
- ◆ Serum bicarbonate
- ◆ Neutrophil-to-lymphocyte ratio [NLR]

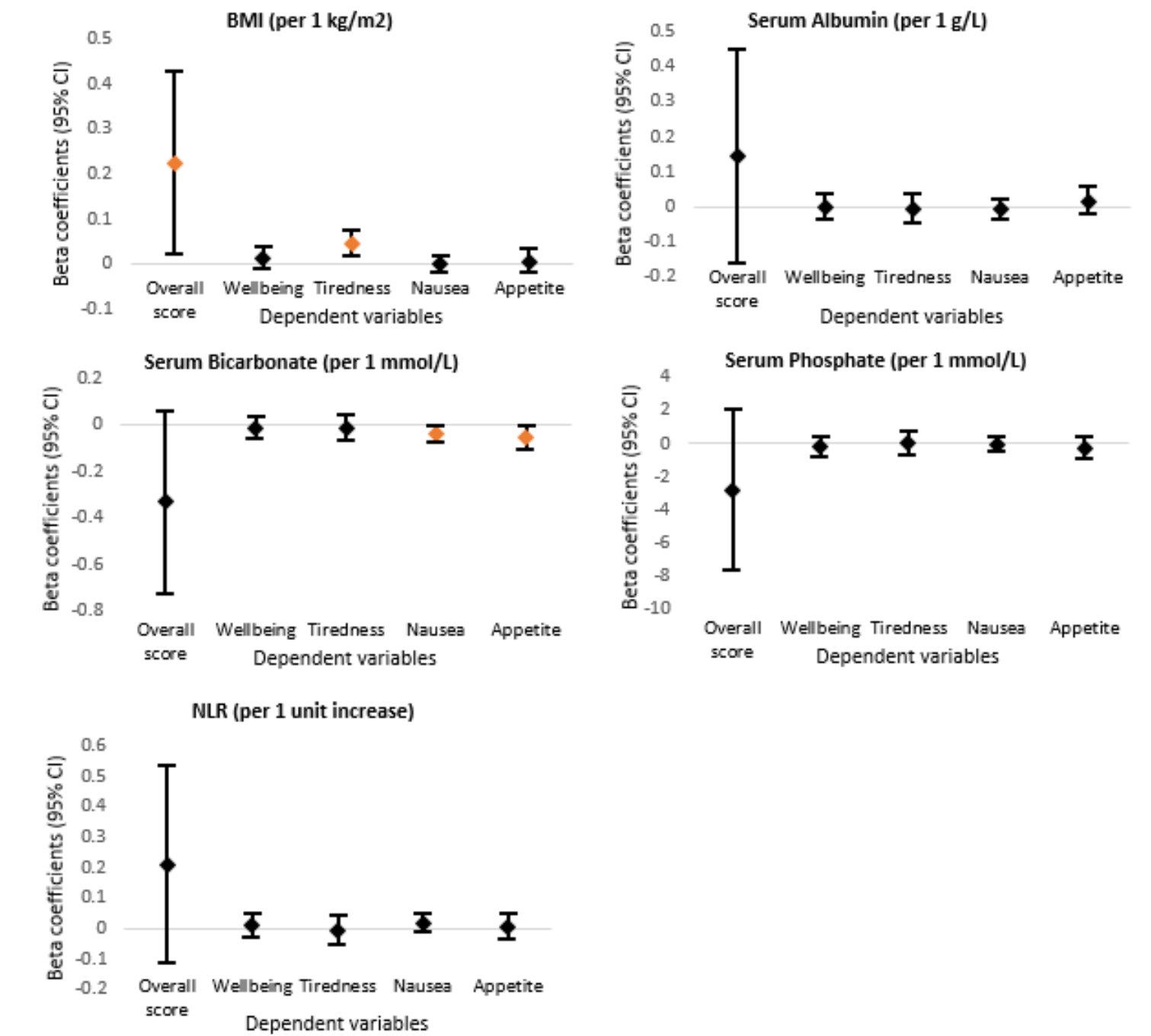
Models were adjusted for age, sex, health region, eGFR, urine ACR, hypertension, diabetes, cardiovascular disease, medication number, iPTH, ferritin, iron saturation, and hemoglobin.

Results

Demographic characteristics of KCC patients with ESAS scores included a mean age of 71.8 years, 41% female, 60% with comorbidities such as diabetes or hypertension, mean serum ACR of 37.1 mg/mmol, mean BMI of 28.1 and similar levels of biochemical markers of interest.

There were negative associations between serum bicarbonate in nausea sub-score (-0.0395 per 1 mmol/L increase in bicarbonate) and appetite sub-score (-0.0571 per 1 mmol/L increase in bicarbonate). Serum albumin, phosphate, and NLR did not demonstrate significant associations with any of the four ESAS sub-scores (Figure 1).

Figure 1. Associations between Nutritional Parameters and ESAS Scores



*Parameters in orange indicate significant values.

Conclusion

This analysis suggests that lower serum bicarbonate is associated with worse nausea and appetite sub-scores. Further analyses will assess associations between oral nutritional supplement use and change in ESAS.