

## ORIGINAL RESEARCH (COMPLETED RESEARCH WITH OUTCOMES)

### CHALLENGING CLINICAL NUTRITION ASSUMPTIONS: *HIGHER* BODY WEIGHT PREDICTS *LOWER* PRE-OP PROTEIN INTAKE BEFORE PANCREATICODUODENECTOMY

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**Background:** Pancreatic head cancer has a one-year relative survival rate of 20%. Surgical resection is the only chance at cure, but 40-70% of patients who undergo pancreaticoduodenectomy (PD, or ‘Whipple’) have peri-operative complications that impact quality of life, and can prevent the adjuvant chemotherapy needed for optimal survival outcomes. Evidence suggests dietary protein intake is important for surgical recovery, and most patients do not meet national recommendations of 1.2 grams of protein/kg body weight pre-operatively. Even so, assessment by a nutrition professional is not standard of care, and there are no guidelines for other healthcare professionals who must decide which patients to refer to a dietitian. Referrals may be based on low body weight, assumed to directly reflect lower protein intake.

**Purpose:** We aim to determine whether body weight and total daily calorie intake can predict pre-op daily protein intake in patients awaiting PD for pancreatic and related cancers and pre-cancers.

**Methods:** This is a cross-sectional exploratory analysis of baseline data collected 2-weeks before PD, in an ongoing pilot RCT of exercise and nutrition prehabilitation. Daily intake of dietary protein (DPI) and total calories (DCI) was estimated from a dietitian-administered 24-hour Food Recall survey. Body Weight (BW) was measured by Bioelectrical Impedance. We performed statistical analysis using a multivariate linear regression model with alpha 0.05.

**Results:** 62 patients (46.8% female, age  $66.7 \pm 11.5$  yrs., 90.3% non-Hispanic white) had complete data for inclusion in this analysis. All prospectively consented between 2016 and 2019. Mean DPI was  $0.85 \pm 0.39$  g/kg, and only 12 people (19.4%) met 1.2 g/kg threshold. Mean DCI was  $1623.7 \pm 610.6$  kcal, and BW was  $178.9 \pm 38.5$  lbs. in this cohort of mean height  $67.1 \pm 11.5$  in. In multivariate regression, BW (beta = -0.122) and DCI (beta = 0.300) significantly predicted DPI ( $p < 0.001$ ). The observed dependent variables moderately correlated ( $R = 0.837$ ) with values predicted by the final model.

**Conclusions:** Few patients at Stephenson Cancer Center meet national dietary protein recommendations at time of consent for PD, and while *lower* protein intake associated with *lower* total calorie intake, it also associated with *higher* body weight. This latter finding challenges a clinical assumption that could prevent survivors with lowest protein intake from being referred for nutritional intervention. These findings support the need for further research on interventions to improve pre-operative dietary protein intake, and the specific, independent role of dietary protein in PD outcomes.

**Relevance to Allied Health:** These findings have clinical implications for all healthcare professionals who seek to identify individuals with low protein intake and offer them supportive interventions before resection of pancreatic cancers and precancers.