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Authors

Otobe, Yuhei
Nguyen, Danh
Guerrero, Yalitzi
[et al.](#)

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CLINICAL CHARACTERISTICS ASSOCIATED WITH HUMAN ACTIVITY PROFILE SCORES IN HEMODIALYSIS PATIENTS WITH THYROID DYSFUNCTION: A SUBSTUDY OF THE NIH THYROID-HD TRIAL

Yuhei Otobe, Danh Nguyen, Yalitz Guerrero, Yoko Narasaki, Amy You, Kamyar Kalantar-Zadeh and Connie Rhee

University of California Irvine, Irvine, CA, USA

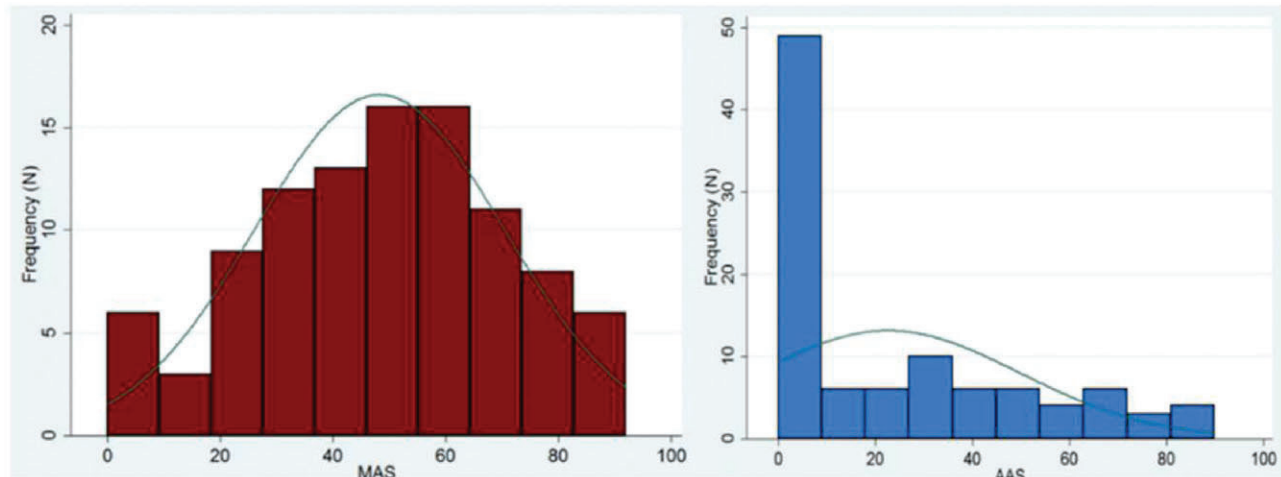
BACKGROUND AND AIMS: Low physical activity is common in hemodialysis (HD) patients and is associated with adverse outcomes in this population (poor health-related quality of life, cardiovascular [CV] disease, death). Prior studies show that hypothyroidism is highly prevalent in HD patients, and is associated with worse self-reported physical function.

METHOD: In a substudy of the ongoing multi-center NIH THYROID-HD Trial, we examined baseline physical activity scores determined by the Human Activity Profile (HAP), a validated 94-item instrument assessing daily activities across a wide range of energy expenditures, in HD patients with TSH levels in the high-normal (TSH >3–5 mIU/L) and subclinical hypothyroid range (TSH >5–10 mIU/L). The HAP was used to derive the Maximum Activity Score (MAS) and Adjusted Activity Score (AAS), representing greatest and mean estimated energy expenditures, respectively (range 0–94, segmented to low [<52], moderate [54–73] and high [>74] scores).

RESULTS: Among 100 HD patients who underwent baseline HAP assessment, the mean \pm SD MAS and AAS scores were 48 ± 22 and 23 ± 27 , respectively; median (IQR) MAS and AAS scores were 49 (31–64) and 9 (0–39), respectively (Figure 1). In the overall cohort, 83% had low, 10% moderate and 7% high AAS scores. MAS and AAS scores were significantly lower in patients who had underlying diabetes versus those without diabetes (Table 1). There was also a trend towards lower (worse) MAS and AAS scores among older versus younger patients (≥ 65 versus <65 years, respectively) and patients with underlying coronary artery disease (CAD) versus those without CAD. In logistic regression analyses, older age ($+1$ -year increments) was associated with higher likelihood of low MAS scores, and diabetes trended towards

significant association (defined as $<$ median of observed values) (ref: MAS \geq median): ORs [95% confidence intervals (95% CIs)]: 1.04 (1.01–1.09); $P = 0.005$ and 2.57 (0.96–6.86); $P = 0.06$, respectively. Similarly, older age ($+1$ -year increments) and diabetes were each associated with higher likelihood of low AAS scores (defined as < 52) (ref: moderate-high AAS scores): ORs (95% CIs): 1.06 (1.02–1.11); $P = 0.01$ and 4.83 (14.6–16.0); $P = 0.01$, respectively.

CONCLUSION: In this substudy of the NIH THYROID-HD Trial, HAP scores in HD patients with high-normal and subclinical hypothyroid range TSH levels were lower than observed in prior historical dialysis cohorts that did not have underlying thyroid dysfunction. Additionally, older age and diabetes were each associated with worse HAP scores. Further research is needed to determine the impact of thyroid hormone replacement on improving physical activity and function in this population, particularly those of elder age and with underlying diabetes.



Differences in Human Activity Profile Scores Across Clinical Characteristics

| | MAS score Median (IQR) | P-value | AAS score Median (IQR) | P-value |
|---|---------------------------|---------|---------------------------|---------|
| Age < 65 years Age ≥ 65 years | 51 (33–66) 46 (22–51) | 0.07 | 19 (0–46) 0 (0–13) | 0.11 |
| Males Females | 51 (31–68) 48 (30–61) | 0.33 | 10 (0–44) 2 (0–36) | 0.49 |
| White Non-White | 48 (29–63) 51 (39–68) | 0.35 | 7 (0–37) 19 (0–56) | 0.34 |
| Hispanic Non-Hispanic | 51 (30–66) 47 (39–61) | 0.90 | 12 (0–39) 1 (0–39) | 0.52 |
| Vintage < 1 year Vintage ≥ 1 year | 47 (30–68) 51 (34–62) | 0.99 | 1 (0–52) 9 (0–37) | 0.98 |
| AVF/AVG CVC | 51 (34–66) 47 (27–60) | 0.33 | 10 (0–45) 1 (0–30) | 0.41 |
| Diabetes No Diabetes | 45 (29–61) 57 (43–78) | 0.02 | 0 (0–32) 24 (1–71) | 0.01 |
| CAD No CAD | 42 (28–58) 51 (33–66) | 0.14 | 0 (0–32) 17 (0–44) | 0.09 |
| CVD No CVD | 48 (31–61) 48 (33–63) | 0.87 | 2 (0–33) 12 (0–39) | 0.53 |
| BMI < 25 kg/m ² BMI ≥ 25 kg/m ² | 56 (30–70) 48 (33–63) | 0.53 | 22 (0–56) 8 (0–35) | 0.39 |
| TSH > 3 –5 mIU/L TSH > 5 mIU/L | 48 (31–63) 51 (34–67) | 0.78 | 9 (0–37) 11 (0–54) | 0.79 |