PO0821
Steady Exercise Improves Hand Grip and Leg Muscle Strength in Hemodialysis Patients
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Background: Sarcopenia due to chronic inflammation and biochemical disturbances in chronic kidney disease is severer and more prevalent in patients on hemodialysis (HD). We longitudinally evaluated the hand grip (HGS) and leg muscle strength (LMS) in patients receiving HD and tried to find factors associated with muscle strength.

Methods: We screened (January 2020 (n=127)) and followed up (June 2020 (n=110) and December 2020 (n=104)) HGS (opposite the fistula side) and LMS (both sides) at single center by using digital hand and leg dynamometer (T.K.K.5401 and 5710e/5715, Takei scientific instruments Co. Ltd., Niigata, Japan).

Results: HGS and LMS showed good correlation (r = 0.658, p < 0.001). HGS (24.2 vs. 15.5 kg) and LMS (32.8 vs. 22.5 kg) were better in men (p < 0.001 and p < 0.001, respectively). Muscle strength was greater in men irrespective of age except for LMS in younger patients (< 60 years). Older patients (≥ 60 years) showed decreased LMS than others in women (p = 0.01). Patients who performed steady home- or hospital-based exercise showed marginally higher HGS (23.1 vs. 19.8 kg, p = 0.07) and significantly higher LMS (33.7 vs. 25.9 kg, p = 0.004). Steady exercise showed improvement of LMS throughout the study period (from January to June, p = 0.004, from January to December, p = 0.014). Multiple linear regression analysis proved male sex and steady exercise were factors associated with better HGS and LMS. Steady exercise showed greater impact on LMS in male patients with longer HD vintage (≥ 44 months) and on HGS in younger male patients with shorter HD vintage (< 44 months).

Conclusions: Sex, age, and steady exercise were important determinants of muscle strength in HD patients. And serum creatinine and dry weight, which reflects muscle mass, were also important in determining muscle strength. We need to encourage patients to do regular home- or group-exercise from the beginning of dialysis and introduce new feasible form of exercise for HD patients.

PO0822
The Association Between Prevalence of Peritoneal Dialysis vs. Hemodialysis and Patients’ Home Distance to Dialysis-Providing Facilities
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Background: Accessibility to dialysis facilities should play a role when deciding on a patient’s long-term dialysis modality. Studies investigating the effect of distance to nearest dialysis-providing unit on modality choice, however, have yielded conflicting results. We investigated the association between patients’ dialysis modality and the distances (driving and straight) to the closest HD and PD-providing units.

Methods: All ESKD patients (USRDS) who initiated in-center HD and PD in 2017, were 18-90 years old, and on dialysis for ≥ 90 days were included. Patients who resided in non-conterminous US or lived >90 miles from the nearest HD-providing unit were excluded.

Results: Among 102,247 included patients, median driving distance to the closest HD unit was greater for PD patients (3.9 vs 2.9 miles; p <0.001). Compared to HD patients, PD patients had longer driving distances to their nearest PD unit (4.4 vs 3.4 miles; p <0.001). PD utilization increased with increasing distance from patients’ homes to the nearest HD unit (OR 1.11, 95% CI 1.08-1.14 per 10-mile increase). This association did not change whether the PD unit was farther/closer than the nearest HD unit (Figure 1). This association was not seen when analysis was performed using straight line distance.

Conclusions: PD utilization increases with increasing driving distances from the nearest dialysis providing units (HD or PD). Using driving distance, but not straight line distance affects data analysis and outcomes. Increasing the number of PD units may have a limited impact on increasing PD utilization.

PO0823
Evaluation of Frailty Assessment Tools and Their Measurement Properties in CKD
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Background: Frailty is three to seven times more common in people with chronic kidney disease (CKD) than in those with normal kidney function. Although frailty and its impact in CKD is well-recognized, the measurement properties of the tools used to assess this syndrome are not known. The aim of this systematic review was to evaluate frailty assessment tools and their measurement properties in CKD.

Methods: The study was conducted using the Consensus-based Standards for the selection of health Measurement Instruments (COSMIN) guidelines and Preferred Reporting Items for Systematic reviews and Meta-Analyses for Protocols (PRISMA-P 2015). We searched ten electronic databases (eg. OVID MEDLINE, OVID EMBASE, OVID Health and Psychosocial Instruments, Cochrane Central Register of Controlled Trials (CENTRAL)) and screened studies as per the following inclusion criteria: peer-reviewed original research, adults with CKD (non-dialysis, dialysis or kidney transplant (KT)), examines at least one established multidimensional tool used for the assessment of frailty, and presents information to evaluate the measurement properties of the tool. Methodological quality assessment and data synthesis will be performed as per COSMIN guidelines. This review was registered with PROSPERO (CRD42021234538).

Results: We retrieved 647 unique citations with 58 eligible studies (N=16,026) of which 60% were prospective cohort studies. The majority (59%) included patients on dialysis, 19% were KT, and the remaining non-dialysis CKD. The dialysis populations utilized hemodialysis (HD) (38%) and peritoneal dialysis (PD) (34%) modalities. Fried’s phenotype was the most commonly tool used to assess frailty (57%). Predictive validity was the most frequently reported measurement property (86%) followed by responsiveness (12%). Thirty-one (53%) of the included studies using the Fried’s Phenotype evaluated predictive validity.

Conclusions: In this review, a majority of the studies focused on the dialysis and non-dialysis populations. Fried’s Phenotype, the most commonly administered tool, primarily evaluated predictive validity. Future research is required to identify the tool(s) that will be predictive of adverse health outcomes in the KT population and additional studies evaluating these tool’s responsiveness to change are needed.