Patients with an additional infection showed an increased titre of antibodies during follow-up.

CONCLUSIONS: Our data suggest regular antibody testing as well as a need for booster vaccination in the vulnerable population of haemodialysis patients.

**FACTORS RELATED TO CHRONIC KIDNEY DISEASE-ASSOCIATED PRURITUS IN PATIENTS UNDERGOING HAEMODIALYSIS AND ITS EFFECTS ON QUALITY OF LIFE**

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BACKGROUND AND AIMS: Chronic kidney disease-associated pruritus (CKD-aP) is an often overlooked, common and debilitating problem for patients undergoing haemodialysis. Although the prevalence of CKD-aP has decreased over the years, it continues to be a problem associated with quality of life impairment, sleep disturbances, increased mortality and morbidity. With this study, we aim to investigate factors related to CKD-aP and its impact on patients’ quality of life.

METHOD: We conducted a cross-sectional study of in-centre HD patients in the city of Eskişehir, Turkey. A total of 298 patients undergoing HD for >3 months were enrolled in the study. We analysed demographic characteristics, routine laboratory values, interdialytic weight gain, residual urine output, xerosis, 5D itch scale scores (multidimensional itch-related questionnaire), VAS score (ranging from no itching to the worst itching imaginable) and LANSS score (neuropathic pain assessment scale) of enrolled patients.

RESULTS: Mean age of 298 patients was 64.6 ± 13.2 and 52% of patients were male. Pruritus prevalence in the study group was 45%. The 5D scores were higher among patients with < 200 mL residual urine output versus patients with > 500 mL residual urine output (P = .034). The 5D scores were lower among patients with with xerosis (P < .001). The 5D scores were again higher among patients with a LANSS score of > 12 (P < .001). The 5D scores were lower among the low-flux membrane group versus the high-flux membrane group (P = .001). The 5D scores were correlated with interdialytic weight gain (r = 0.124; P = .033), Kt/V (r = 0.228; P < .001), ALT levels (r = 0.135; P = .02), total iron binding capacity (r = 0.105; P = .025) and VAS scores (r = 0.096; P < .001). There were no statistically significant correlations between 5D scores and age, body mass index, HD duration, creatinine, BUN, calcium, phosphorus, calcium-phosphorus product (CaXP) and other routinely tested laboratory values.

CONCLUSION: In our study, we identified residual urine output, xerosis, neuropathic pain, HD membrane type, interdialytic weight gain, Kt/V, ALT and TIBC as factors related to CKD-aP. The strong relationship between itch severity and neuropathic pain scores was especially notable. More research in this field may be beneficial for identifying new therapeutic targets for CKD-aP.

**Table 1. CVC: central venous catheter, AVF: arteriovenous fistula, DM: diabetes mellitus and HT: hypertension**

| Variables                | 5D Score       | P-value |
|--------------------------|----------------|---------|
| Sex                      |                |         |
| Male                     | 8.49 ± 4.39    | .43     |
| Female                   | 8.15 ± 4.30    |         |
| Vascular access          |                |         |
| CVC                      | 8.19 ± 4.02    | .98     |
| AVF                      | 8.38 ± 4.48    |         |
| HD membrane              |                |         |
| High-flux                | 8.73 ± 4.53    | .001*   |
| Low-flux                 | 6.37 ± 2.47    |         |
| Residual urine output    |                |         |
| < 200 mL                 | 8.78 ± 4.39    | .013*   |
| > 500 mL                 | 7.43 ± 4.36    |         |
| DM                       |                |         |
| Present                  | 8.21 ± 4.40    | .64     |
| Absent                   | 8.41 ± 4.31    |         |
| HT                       |                |         |
| Present                  | 8.27 ± 4.42    | .51     |
| Absent                   | 8.44 ± 4.19    |         |
| Xerosis                  |                |         |
| Present                  | 10.65 ± 4.72   | < .001* |
| Absent                   | 7.88 ± 4.13    |         |
| LANSS score              |                |         |
| ≥ 12                     | 10.25 ± 5.09   | < .001* |
| < 12                     | 7.76 ± 3.93    |         |

**Table 2. Correlation coefficients (r) and and statistical significance (P) of variables and 5D/VAS scores. IDWG: interdialytic weight gain. TIBC: total iron binding capacity**

| Variables                | 5D Score       | VAS     |
|--------------------------|----------------|---------|
| Age                      | r = -0.29      | P < .01 |
| HD Duration              | r = 0.042      | P = .674 |
| IDWG                     | r = 0.124*     | P < .033 |
| Creatinine               | r = 0.105      | P = .089 |
| Calcium                  | r = 0.021      | P = .716 |
| Phosphorus               | r = 0.004      | P = .050 |
| Calcium-phosphorus product | r = 0.025  | P = .667 |
| Kt/V                     | r = -0.228**   | P < .001* |
| Albumin                  | r = 0.021      | P = .005 |
| Haemoglobin              | r = 0.065      | P = .052 |
| ALT                      | r = 0.135*     | P < .001* |
| CRP                      | r = -0.113     | P = .011 |
| ALP                      | r = 0.059      | P = .071 |
| Fe                       | r = 0.105      | P = .113 |
| TIBC                     | r = 0.130*     | P < .001* |
| Transferrin saturation   | r = 0.019      | P = .033 |
| Ferritin                 | r = -0.025     | P = .067 |
| PTH                      | r = -0.094     | P = .111 |

**ANXIETY AND DEPRESSION AMONG DIALYSIS CENTRE STAFF AND HAEMODIALYSIS PATIENTS DURING THE COVID-19 PANDEMIC**

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BACKGROUND AND AIMS: In Moscow, the nephrological service is organized as follows: (1) specialize centres of haemodialysis in which patients with COVID-19 are treated and (2) ordinary departments of haemodialysis, in which there are no patients with coronavirus infection, but patients with COVID-19 are identified in them and these patients are sent for treatment to specialize departments. This study was aimed at examining the level of anxiety and depression in patients on haemodialysis in comparison with a group of medical staff (doctors and nurses) working in the ordinary department of haemodialysis during the COVID-19 pandemic. Also, we were compared both groups with the level of anxiety and depression in the general population of healthy people who lived in the era of the COVID-19 pandemic. Based on the results of meta-analysis of 2189 current studies of depressive disorders during the pandemic [1].

METHOD: We used the Hospital Anxiety and Depression Scale (HADS) to evaluate the level of anxiety and depression. Before the study, informed consent was taken from all responders to participate in the study, as well as permission to publish the results. In this study, we included 40 stable patients receiving haemodialysis (15 women and
25 men). The average age was 58.6 years (45–84 years). Time spent on haemodialysis: up to 1 year: 9 patients; up to 5 years: 16 patients; and >5 years: 15 patients. Average 4.9 years (1–20 years). The main causes leading to the end stage of renal failure were: polycystic disease (24%); type 2 diabetes mellitus (20%); hypertension (16%); glomerulonephritis (23%) and others (17%). The group of medical staff consisted of 43 people (16 doctors and 27 nurses). The ratio of men and women was: 1: 3 and 1: 5.7, respectively. The average age of doctors was 50.3 ± 15.6 years; nurses 34.1 ± 8.2 years.

For comparison, we used materials from the meta-analysis [1], where the prevalence of depression was 19.97% and anxiety was 15.15% as the consequence of the COVID-19 pandemic for the mentally healthy population.

RESULTS: In the group of patients, anxiety and depression were detected in 16 patients (40%), in 4 patients (10%) – clinically significant. By the time spent on haemodialysis: up to 1 year: 4 patients (without clinically significant manifestations); up to 5 years: 7 patients (3 with clinically significant manifestations); and >5 years: 5 patients (1 with clinically significant manifestations). In the group of medical staff, anxiety and depression were detected in 13 people (32.5%), of which clinically significant in 4 people (9.3%). Anxiety and depression were found in 6 doctors (37.5%) (2 men and 4 women) and in 7 nurses (25.9%) (1 man and 6 women). Clinically significant manifestations were noted in 2 doctors and 2 nurses. In the group of patients, anxiety and depression were observed in 1 young patient, in 5 middle-aged patients and in 10 elderly patients (60–74 years old). In the group of medical workers, an increased level of anxiety and depression were observed in 10 young people and in 3 middle-aged people.

CONCLUSION: Patients on haemodialysis and dialysis centre staff, the levels of anxiety and depression were twice times higher compared with the data of anxiety and depression in healthy populations during the COVID-19 pandemic. Patients on haemodialysis and medical staff had same level of anxiety and depression. The level of anxiety and depression among doctors was significantly higher than in nurse; this difference can be explained by a small sample, as well as a higher level of education among doctors and a tendency to reflect.

REFERENCE
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Table 1.

| Attention | Had difficulty in maintaining attention: 8% |
| Memory   | Felt distracted or lost attention: 11 % |
| Learning | Forgot important events or appointments: 8% |
|          | Lost things or not remembered their location: 8% |
|          | Had difficulty in finding/saying well-known words: 0% |
|          | Had difficulty in remembering steps, procedures or names of healthcare professionals: 3% |

CONCLUSION: The patients’ perception of their attention capacity, memory function and learning capacity was in general positive. However, further studies using validated questionnaires regarding different aspects such as attention, memory or learning functionality are needed to confirm these findings.

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THE TIME TO NEGATIVE CONVERSION AMONG ADULT COVID-19 PATIENTS ON CHRONIC HEMODIALYSIS ADMITTED AT THE PHILIPPINE GENERAL HOSPITAL

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BACKGROUND AND AIMS: In the Philippines, the shortage of dialysis centers that cater to ESKD individuals who tested positive for COVID-19 uniquely presents a logistic challenge, as these patients remain admitted in COVID-19 hospitals with hemodialysis units despite the clinical resolution of their disease. The majority of free-standing hemodialysis units require proof of negative conversion despite recommendations from local guidelines.

As proof of negative conversion remains important in many practical settings, the negative conversion rate of SARS-CoV-2 infection has been the subject of several investigations. However, negative conversion rates particularly for ESKD patients with COVID-19 infection are lacking.

Hence, this study aims to determine the time to negative conversion of COVID-19 RT-PCR testing among adult COVID-19 patients on chronic hemodialysis admitted at the Philippine General Hospital (PGH), a tertiary government hospital assigned as one of the COVID-19 referral centers in the country. This knowledge will allow for a more systematic and evidence-based implementation of the test-based approach, ultimately determining whether such an approach can be shifted to a symptom or time-based procedure in order to shorten the isolation period and conserve resources, especially in resource-limited settings.

METHOD: This is a retrospective cohort study. All adult patients on chronic hemodialysis who were admitted at PGH after the diagnosis of COVID-19 by RT-PCR between March 2020 and February 2021 were included. Patients who were asymptomatic for COVID-19, whose charts could not be retrieved, whose COVID-19 RT-PCR results were missing and those who died or got discharged without having a negative COVID-19 RT-PCR result were excluded in this study. Descriptive statistics were used in summarizing the data. Time to negative conversion is the primary outcome measure.

RESULTS: A total of 90 patients who were on chronic hemodialysis and tested positive for COVID-19 via RT-PCR admitted at PGH at the specified time period met the inclusion and exclusion criteria. A total of 60% were males and the median age was 55 years old. The mean HD vintage was 2.95 years. Among the causes of ESKD, 46% was from hypertension, 31% was due to diabetes mellitus, 15% due to chronic hemodialysis, 0.80% was caused by autosomal polycystic kidney disease, 2.50% was due to obstructive uropathy and the remaining 4.0% of patients with ESKD were due to other causes such as NSAID nephropathy, gouty nephropathy, etc. Of these, 17% had mild, 53% had moderate, 18% had severe and 12% had critical COVID-19.

The mean number of days from the onset of symptoms to clinical recovery is 22.48 days; the median was 18 days. One patient had clinical recovery only after 84 days. The median time to first negative conversion was 24.5 days, with a mean of 26.65 days. There were 6.67% who achieved negative conversion on the first week; 15.56% on the second week; 24.44% on the third week; 26.67% on the fourth week; 8.89% on the fifth week; 6.67% on the sixth week; 4.44% on the seventh week; 5.56% on the eighth week; and 1.11% on the ninth week. After 28 days, 90% of the patients had clinical recovery, but 15% of them still had positive RT-PCR results.

CONCLUSION: Among adult patients on chronic hemodialysis who were admitted at PGH after the diagnosis of COVID-19 by RT-PCR between March 2020 and February 2021, the median time to negative conversion was 24.5 days.