



Letter to Editor

End-stage kidney disease and COVID-19: An incentive to consider other renal replacement therapiesSima Sadat Hejazi¹, Meimanat Hosseini^{2*}, Abbas Ebadi³, Hamid Alavi Majd⁴¹Student Research Committee, Department of Community Health Nursing, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran²Department of Community Health Nursing, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran³Behavioral Sciences Research Center, Life Style Institute, Faculty of Nursing, Baqiyatallah University of Medical Sciences, Tehran, Iran⁴Department of Biostatistics, Faculty of Paramedicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

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Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory distress syndrome coronavirus 2 (SARS-CoV-2), was officially reported in December 2019 in Wuhan, China, for the first time and then spread rapidly to other countries(1). All people are at risk for COVID-19, but the risk of developing the disease in its more severe form is higher in some groups, such as the elderly, people with chronic kidney disease, chronic obstructive pulmonary disease, solid transplant recipients, obesity, sickle cell disease, patients with special cardiac conditions, type 2 diabetes mellitus and hypertension (2, 3).

In general, patients with End-Stage Kidney Disease (ESKD) are at high risk of morbidity and mortality. This trend is much faster among elderly patients who have a variety of underlying diseases and are less likely to receive kidney transplantation (4). These patients need hemodialysis or peritoneal dialysis to survive if they do not receive kidney transplantation. On the other hand, patients subject to in-center hemodialysis are especially vulnerable to COVID-19 for two reasons.

First, patients undergoing in-center hemodialysis must leave home three times a week for the hemodialysis center, spending

hours in the hospital and taking risks on their way back toward home. Second, patients with ESKD who are getting infected with COVID-19 due to older age and underlying diseases such as diabetes, as well as immune system defects, are at greater risk of complications and mortality. On the other hand, the hemodialysis center's logistical aspects increase the likelihood of COVID-19 transmission (5).

Ikizler states that clinical outcomes (especially mortality) are high in hemodialysis patients and reach almost 30%. Moreover, in these patients, significant pulmonary complications have been observed with a high rate of acute respiratory distress syndrome and mechanical ventilation need, indicating that patients treated with maintenance hemodialysis are at elevated risk of COVID-19 complications (6). Patients undergoing hemodialysis at a center evaluated by Wu et al. were more likely to experience shock and acute respiratory distress syndrome. They needed more mechanical ventilation than the control group (7).

The incidence, mortality, and fatality of COVID-19 were significantly higher among hemodialysis patients in Brazil at 5.1, 33.4, and 6.4 fold, respectively (8). Official statistics on the incidence of COVID-19 in hemodialysis patients in Iran have not been available. Scattered data such as the study of

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Osare et al. revealed that in a hemodialysis center of Tehran, out of 178 patients, 11 and 56 patients had been infected with COVID-19 before and after the start of the screening program, respectively (9). Furthermore, the Chief Executive Officer of the Kidney Foundation of Hamedan announced that since the beginning of the COVID-19 pandemic, 48 hemodialysis patients had been infected, of whom 41 patients lost their lives (10).

Given the risks mentioned above in this group of patients, alternatives to hemodialysis such as peritoneal dialysis and home hemodialysis can help reduce the risk of COVID-19 by reducing contacts and taking advantage of social distance. COVID-19 data collected by the UK Renal Registry show that up to April 29, 2020, only 2.9% of patients undergoing peritoneal dialysis have been infected with COVID-19, compared with 9% of hemodialysis patients who have been infected with COVID-19 (6). Also, Snapshots on the prevalence of infection in parts of Italy indicate that patients receiving peritoneal dialysis are less likely to be infected with COVID-19 relative to hemodialysis patients (2).

In the United States and many other countries, dialysis is mainly provided in the form of in-center hemodialysis. The number of patients currently receiving peritoneal dialysis in the United States is ten percent (11). In Iran, at the end of 2016, the population with ESKD requiring renal replacement therapy (RRT) reached nearly 58,000 patients, from whom 29,200 were undergoing hemodialysis; 1624 individuals were treated with peritoneal dialysis (12). Only the former is available to patients in Iran from continuous ambulatory peritoneal dialysis (CAPD) and automated peritoneal dialysis. The growth rate in the application of this method until the end of 2016 was 2%, which is lower than the 3-4% growth rate of patients with ESKD (12).

In Iran, based on our knowledge, home hemodialysis is not performed, the equipment for this type of dialysis is not accessible, and there are no medical,

educational, and supportive programs about this type of treatment for patients.

The circumstances caused by the COVID-19 pandemic seem to be turning the tide concerning the application of other kidney replacement therapies. There is a more difficult way ahead regarding the application of home hemodialysis relative to peritoneal dialysis, especially in Iran. It appears that there is a need to change the attitude and approach from the monopoly of care and treatment in the hospital toward its expansion to the community. In this way, policy-making, resource allocation, planning, and training seem to be necessary. By promoting other RRTs, on the one hand, we will provide much safer conditions for patients with ESKD amid COVID-19 pandemic anxiety, and on the other hand, a big step will be taken towards defining the role of nurses and other health care providers in the community.

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