

# Medical and Socioeconomic Barriers to Peritoneal Dialysis Utilization in the Central Province of Iran

Mahnaz Edalat-Nejad, Fatemeh Abdi

<sup>1</sup>Division of Nephrology,  
Department of Medicine, Arak  
University of Medical Sciences,  
Arak, Iran

<sup>2</sup>School of Nursing, Arak  
University of Medical Sciences,  
Arak, Iran

**Keywords.** end-stage renal disease, patient acceptance of health care, peritoneal dialysis, socioeconomic factors

The objectives of this study were to determine the impact that medical and socioeconomic status have on incident peritoneal dialysis (PD) use. In a prospective cohort study, 77 consecutive end-stage renal disease patients (53% women, mean age,  $57.5 \pm 16.5$  years) who were planned to start dialysis were assessed for PD eligibility. The physicians' referral rate for PD consultation was 71%. One-half of the patients had important medical and socioeconomic barriers to PD, such as lack of family support, learning and performance disability, and less-than-ideal home situation. Patients with barriers were older, low educated, and more likely to be diabetic. In conclusion, consultation with a multidisciplinary team and the availability of health care systems financial supports are important drivers of PD. In addition, there is a likely need for further educational activities focused on PD, in order to change physicians' preference towards hemodialysis.

IJKD 2013;7:147-50  
www.ijkd.org

Peritoneal dialysis (PD) has been used since 1976 to treat patients with end-stage renal disease (ESRD).<sup>1</sup> However, despite this long history, only 8% of patients were under this treatment protocol until 2008 in the United States.<sup>2</sup> The published data review suggests that the reasons for this seems to be issues other than medical impediments and necessities, such as subtle differences in practice patterns and unintended financial considerations.<sup>2</sup> Currently in our center, there are 170 hemodialysis patients versus 8 PD patients; therefore, we aimed to assess the probable factors and barriers that have resulted in underutilization of PD.

This cohort study was conducted, in order to determine the issues that impede the utilization of PD with regards to physical condition (body health and the ability to undergo dialysis, vision, personal and familial hygiene, and learning ability), mental condition (attitude towards regularly undergoing dialysis, and adherence to dialysis therapy), patient's living conditions, and other nonmedical problems (family support and

financial limitations). This study was approved by the Human Research Ethics Committee of the Arak University of Medical Sciences.

The university hospital where study has been conducted is the only hospital in the Central Province of Iran in which both PD and arteriovenous fistula (AVF) surgery are provided. For this reason, all ESRD patients are referred to this hospital in order to determine their treatment plan. The inclusion criteria consisted of having one of the following: advanced chronic kidney failure, referral consultation with a nephrologist prior to starting dialysis, and hospitalization for an AVF surgery. The cases of acute kidney failure or ones regarding the repair or reconstruction of new fistula in a patient that has previously been under dialysis were excluded from the study.

After obtaining informed consent, all of the participants were referred to a Peritoneal Dialysis Consultation team (composed of a nephrologist and a peritoneal dialysis nurse) for consultation and completion of a questionnaire designed for

the purpose of identifying the patient’s eligibility to select PD as the treatment modality. The referrals were the responsibility of the province’s nephrologists. In order to collect information about the demographics, underlying disease, and the occupational and living status, a special questionnaire was designed. Also, the physical and mental condition, the ability and capacity for learning the skills necessary for performing PD, and the learning ability and adherence of the patient to treatment were assessed by the Peritoneal Dialysis Consultation team and the results were recorded.

During 1 year period between December 2010 and December 2011, 77 patients gradually entered the study. With patients who were candidates for AVF surgery and starting hemodialysis, only the collection of information regarding demographic, illness, living and occupational conditions sufficed. However, upon their consent, patients who were referred for consultation and were potential candidates for PD were given all useful information regarding the dialysis process, types of dialysis, and the peritoneal dialysis method (through verbal explanation, brochures and CDs, or interviews and communication with PD patients).

Forty-one of 77 patients were women (53%), and 62 patients (81%) were under physician care before reaching ESRD. The mean age of study population was  $57.5 \pm 16.5$  years (range, 18 to 88 years). Fifty-seven patients (74%) resided in cities and the rest lived in nearby rural areas. The underlying causes of ESRD are shown in the Figure.

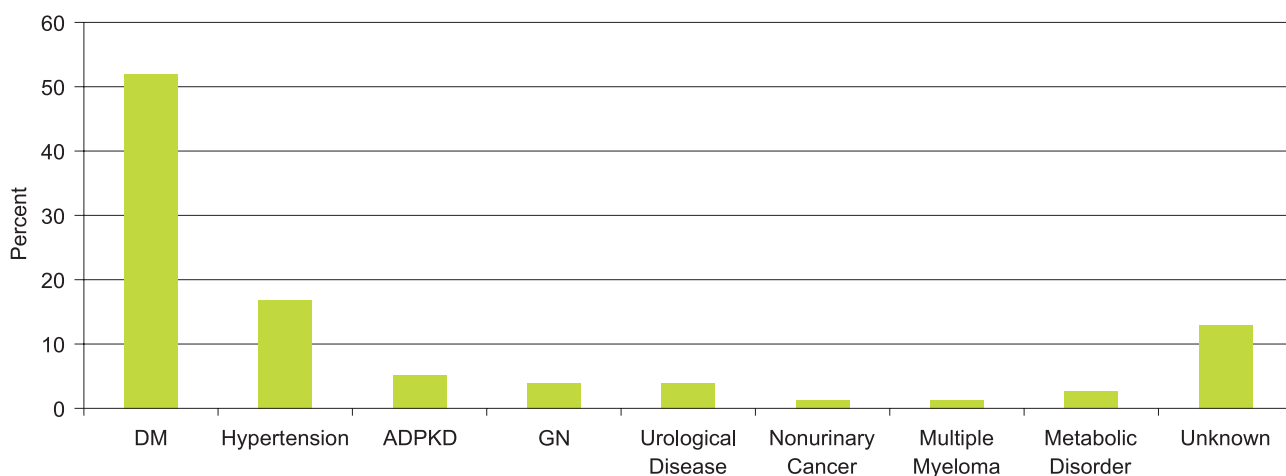
The patient’s overall condition in terms of physical, mental, and living status, as well as the

patient’s compliance and family support were examined and the results have been shown in Table 1. In 9 patients (11%), the home and living conditions posed a serious problem for trying PD program and in almost half of these individuals, the housing status was the soul deterrent for choosing this treatment modality. Also, the lack of support from family members, learning problems, and poor adherence of the patient posed serious obstacles for choosing this treatment method in 45%, 31%, and 51% of the cases, respectively (Table 1).

The physician’s cooperation in terms of referring the patient to seek counseling for PD was 71% (54 cases). Fifty percent of these individuals were patients who, with the proper amount of training and financial support, could be potential candidates for PD. There was no meaningful differences in terms of physical or mental condition, age, and underlying cause of ESRD between patients who were referred by the physician and those who

**Table 1.** Assessment of Patients for Start of Peritoneal Dialysis

Factor	Status for Starting Peritoneal Dialysis (%)		
	Suitable	Borderline	Not Suitable
Physical Performance of self-care	22.4	42.4	35.2
Mental performance	4.7	41.2	54.1
Individual hygienic	11.8	71.8	16.4
Vision	17.6	47.1	35.3
Learning ability	10.6	58.8	30.6
Financial status	5.9	72.9	21.2
Family support	9.4	45.9	44.7
Patient’s Compliance	4.7	44.7	50.6
Living status	9.4	80	10.6



Underlying cause of end-stage renal disease of the study population (n = 77).

were not (data not shown). Of 28 individuals (50%) referred by the physician who were judged to be suitable potential candidates for PD, 8 (29%) started on PD, 6 (21%) underwent transplantation procedures or were placed on a transplant wait list, and 14 (50%) refused PD and started on hemodialysis. Overall, the number of PD procedures was 15% (8 patients of 54) and the number of acceptances was 30% (8 of the 28 suitable potential candidates for PD).

Overall, 8 patients (10%) started on PD. Sixty-three patients (82%) were eventually placed on hemodialysis treatment, of whom 11 (17%) with an average age of 66 years died during the course of the study. Fifty-four percent of these patients were diabetic and all of them were either illiterate or had low literacy level. Six patients (average age, 42 years) were transplanted. Most of these patients were women (85%) and all of them had a high school diploma or a higher level of education and none of them were diabetic. The year-end status of the study population is shown in Table 2.

In spite of the constantly growing use of kidney transplant in our country, PD has the last place among methods of maintenance treatment for patients with ESRD. According to the available data from 2007, PD utilization rate was 2.5%, hemodialysis was 50%, and kidney transplant was 47.5%.<sup>3</sup> In Iran, PD was performed for the first time in 1996 and in the city of Mashhad. It was started in the Central Province after 2004, and currently, less than 4% of dialysis patients are under this treatment modality.

In the current cohort study, in 30% of the cases, the physician did not consider PD treatment method, which seems to be a main reason for underutilization of this method. This result is indirectly compatible with the ones from the Kutner and colleagues' study.<sup>4</sup> They showed that 61% of patients reported that PD had been discussed with them before dialysis. In this study too, only 10.9% of patients began PD treatment after having discussed with a health care provider beforehand and the data

from our study showed similar rates. In a review published by Johansen,<sup>5</sup> the reasons for the less favor of PD was identified as not spending enough time for explanation of and discussion about the different treatment methods by physicians.<sup>6,7</sup> This article not only emphasized the role of the nephrologist in the inadequate approach towards PD, but also after reviewing the available data,<sup>8</sup> considered the nephrologists' attitude and way of thinking as obstacles for the wide-spread utilization of the PD treatment method.

In 50% of cases, issues including medical, socioeconomic issues, and insufficient learning ability and poor adherence of the patient and his/her family are considered serious impediments for starting PD. However, in the Mendelssohn and coworkers' study from Canada,<sup>9</sup> 76% of the patients were found having no serious impediments in terms of physical, mental, and economical issues. This discrepancy could be due to better support of the health care system in Canada.

In conclusion, PD utilization would be cost-effective<sup>10,11</sup> and would have the potential to improve dialysis patients' outcome,<sup>12,13</sup> but it is still not the method preferred by neither the physicians nor the patients. This may be partly due to the patients' full-time involvement with their own treatment procedure, certain fears and misleading conceptions, and also the physicians' extreme level of involvement in the patients' treatment responsibilities and their bias towards hemodialysis treatment modality.

## CONFLICT OF INTEREST

None declared.

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**Table 2.** Dialysis Modality and Outcome of Patients

Outcome	Number (%)
Undergoing or preparing for hemodialysis	52 (67.5)
Death under hemodialysis treatment	11 (14.3)
Undergoing peritoneal dialysis	8 (10.4)
Kidney transplant	6 (7.8)

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Correspondence to:  
Mahnaz Edalat-Nejad, MD  
Amir-Almomenin Hospital, Sardasht, Arak, Iran  
Tel : +98 912 210 7565  
Fax : +98 861 417 3630  
E-mail: mahedalat@arakmu.ac.ir

Received June 2012  
Revised October 2012  
Accepted November 2012