

## Case Series

# Knowledge and preferences of substitution treatment of patients with chronic kidney disease

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## ABSTRACT

Several modalities of renal replacement therapy (RRT) are available for the treatment of end-stage renal disease (ESRD). Patients are likely to face complex medical decisions regarding the type of medical therapy they wish to pursue. A prospective, observational, descriptive and cross-sectional survey case series study was carried out in patients with grade 3-5 chronic kidney disease at the General Hospital 'Dr. Miguel Silva' without starting renal replacement therapy. We used descriptive statistics to evaluate the frequency of the categorical variables and measures of central tendency and dispersion for the quantitative variables. The total number of patients included was 20, with a mean age of  $54.40 \pm 15.93$  years and an age range between 24 and 78 years; 55% of the patients evaluated obtained a 'good' level of knowledge regarding the types of RRT (HD, PD and renal transplantation). All patients received pre-dialysis information before starting the survey. PD was the preferred RRT modality (45%), followed by kidney transplantation (35%) and finally HD (20%). The patient's level of knowledge regarding his chronic kidney disease allows him to make an informed decision about the choice of the ideal treatment. The most preferred renal replacement therapy for previously educated chronic kidney disease patients is peritoneal dialysis. The distance from the hemodialysis center to your home and work activity are important factors in choosing the type of RRT.

**Keywords:** Survey, Knowledge, Preferences, Peritoneal dialysis

## INTRODUCTION

Chronic kidney disease (CKD) is a syndrome that is defined by the presence of an abnormality in renal structure, function, or both, that persists for more than 3 months with implications for the individual's health.<sup>1</sup>

This includes 1 or more of the following: (1) glomerular filtration rate (GFR) less than 60 ml/min/1.73m<sup>2</sup>; (2) albuminuria (urinary albumin 30 mg in 24 hours or urine albumin-creatinine ratio 30 mg/g; (3) abnormalities in the urinary sediment, histology or images suggestive of kidney damage; (4) renal tubular disorders; and (5) History of renal transplantation.<sup>2,3</sup>

There are several modalities of renal replacement therapy (RRT) available for the treatment of end-stage renal disease (ESRD).<sup>4,5</sup> These therapies include kidney transplantation and dialysis (in its two modalities: peritoneal dialysis and hemodialysis). There are new techniques such as allo-hemodialysis (alloHD) which is a recently proposed alternative RRT, still hypothetical, in which the blood of a healthy subject ('donor') flows countercurrent to the patient's blood through the dialyzer. Solutes and fluid are transferred to the partner and then eliminated by his healthy kidneys.<sup>16</sup>

Patients are commonly faced with making complex medical decisions regarding the type of medical therapy

they wish to pursue. Each treatment option has different advantages, limitations, and implications for survival, financial stability, general health status, lifestyle, family involvement, and even the patient's body image.<sup>6,8-10</sup> Studies have been conducted in patients not yet receiving RRT with the intent of understanding patient decision making, and common themes have emerged, including the need to maintain quality of life, the importance of individualization, appropriate information, and whether support systems were in place to effectively cope with the illness experience.<sup>12</sup> Between 18 and 80% of patients have started renal replacement therapy without prior information. This poor access of patients to adequate education about such treatments has been linked to their abrupt initiation of dialysis and their limited access to other forms of RRT, such as kidney transplantation, which is associated with better clinical outcomes.<sup>8,13,17</sup> It is well established that the way options are framed or presented affects the choices people make and thus allows them to make informed decisions to achieve the best possible quality of life regarding their treatment.<sup>7,11</sup> There is little information on the factors that influence the patient's choice of RRT in the pre-dialysis stage.<sup>7,14,15</sup>

## CASE SERIES

Study of case series, prospective, observational, descriptive and cross-sectional survey type. The inclusion criteria were patients with grade 3-5 chronic kidney disease who attended the nephrology clinic at the General Hospital 'Dr. Miguel Silva' who had not yet started renal replacement therapy and decided to participate in the study. A total of 20 patients were selected in a period from April 2020 to May 2020, age >18 years. Descriptive statistics were used to evaluate the frequency of the categorical

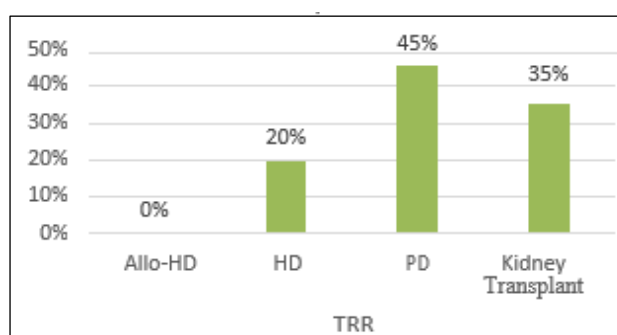
variables and measures of central tendency and dispersion for the quantitative ones. Pregnant patients and patients with previously diagnosed cognitive impairment were excluded.

It was possible to study a total of 20 patients who have not yet received renal replacement therapy, to whom the survey was applied in a period from April 2020 to May 2020, the respondents had a mean age of  $54.40 \pm 15.93$  years and an age range between 24 and 78 years, of which 11 were men and 9 women. When analyzing the answers obtained from the patients regarding the knowledge of HD, PD and RTT (evaluated with a 5-point Likert scale: 'none', 'very little', 'little', 'a lot', 'too much'), we found that for HD, 40% responded that they knew 'a lot' about this type of therapy. In sequence, we observed that 55% of the patients evaluated obtained a 'good' level of knowledge regarding this type of RRT, while 30% obtained a 'regular' level of knowledge and the remaining 15% obtained a level of knowledge 'bad'.

For PD the result was similar, 40% of the patients answered knowing 'a lot' about this modality, obtaining a 'good' level of knowledge (55%) for this RRT, followed by a 'regular' level (25%) and 'bad' (20%); and for RTT, we observed that the most selected response regarding knowledge of this RRT was also 'a lot' (35%), as in PD and HD, with little difference in percentage between the rest of the responses, reporting it as 'good'. 55%, 'fair' 25% and 'bad' 20%, similar to those of PD (Table 1). The type of renal replacement therapy of choice in the 20 patients surveyed who attended the nephrology clinic of the General Hospital 'Dr. Miguel Silva' from Morelia, was PD with 45%, followed by kidney transplant (35%) and finally HD (20%), no patient opted for allo-HD (Figure 1).

**Table 1: Level of knowledge about RRT.**

Variables	N (%)			
Renal replacement therapy	Bad	Regular	Good	Total
Hemodialysis	3 (15)	6 (30)	11 (55)	100
Peritoneal dialysis	2 (20)	5 (25)	11 (55)	100
Kidney trans-plantation	2 (20)	5 (25)	11 (55)	100



**Figure 1: Preference for the type of RRT of patients with CKD at the 'Dr. Miguel Silva' General Hospital in Morelia.**

Regarding the factors that could influence the decision of each of these RRT modalities, when analyzing whether the distance from home to a hemodialysis center influences the decision to start or reject HD, 70% consider that it does influence in this decision of said modality, compared to those in whom distance is not a limiting factor to initiate or reject it (30%).

Of the group of patients who do consider distance as a limiting factor in starting or rejecting HD, 35% preferred PD, 30% renal transplantation, and 5% HD. Of the group of patients whose distance is not limiting, 15% preferred HD, 10% PD, and 5% renal transplantation (Table 2). In relation to sex, the preference for HD and renal transplantation did not have a significant difference in terms of both sexes. For

PD there was more preference on the part of the male sex by 30%. In relation to the work activity of the respondents, the modality preferred by the patients dedicated to the home was HD (20%), while for the PD and kidney transplant modality it was preferred by the group of workers (35% and 25% respectively). The modality preferred by students was kidney transplantation (5%), although this result is not significant because only one patient (5%) was found within this group. Regarding the schooling of the respondents, for the basic school group the preferred modality was PD (30%), for the upper secondary school group it was HD (10%) and in the higher school group the preferred therapy was kidney transplant (15%). Regarding the marital status of the 20 respondents, in the 'married' group, PD was the preferred modality (25%), followed by kidney transplantation (20%) and HD to a lesser extent (5%). In

the 'separated' group, no difference was found between the preference of the type of RRT; in the 'single' group, the preferred modality was kidney transplantation (15%) followed by PD (10%); and finally, in the group of 'widowers' the preferred RRT modality was HD (10%) followed by PD (5%) (Table 2). To analyze the age associated with the type of RRT preferred, they were divided into 2 age groups: the first group were patients <60 years (55%) and the second group, patients >60 years (45%). For the first group, it was observed that there was a similarity of preference regarding the RRT modality between PD (25%) and renal transplantation (25%), HD being found to a lesser extent (5%); for the second group, there was a difference regarding the preferred type of RRT, where PD was the preferred modality (20%), followed by HD (15%) and renal transplantation (10%) (Table 2).

**Table 2: Factors associated with the preference of the type of RRT.**

	Hemodialysis (%)	Peritoneal dialysis (%)	Kidney transplant (%)
<b>Distance from home to HD center</b>			
Does not limit	15	10	5
Yes limits	5	35	30
<b>Sex</b>			
Male	10	30	15
Female	10	15	20
<b>Work activity</b>			
Worker	0	35	25
Student	0	0	5
Home	20	10	5
<b>Scholarship</b>			
Basic	10	30	20
Upper middle	10	5	0
Superior	0	10	15
<b>Civil status</b>			
Married	5	25	20
Separate	5	5	0
Single	0	10	15
Widower	10	5	0

## DISCUSSION

This is the first case series that explores the level of knowledge and renal replacement treatment preferences of patients with CKD in our country, since there is still no research in this regard that focuses on this topic. In general, the participants included in this case series reported being satisfied with the pre-dialysis information provided before beginning the survey, where they were told about their disease and the different treatment modalities.

When analyzing the level of knowledge obtained in our patients, we observed that the highest percentage of them (55%) had 'good' knowledge regarding the different RRT modalities, not finding a great difference in results between each of them, this may be the result of the pre-dialysis education provided prior to conducting the survey. This compares with the Finkelstein study, where they measured

'perceived knowledge' of treatment options for end-stage renal disease in a cohort of patients with chronic kidney disease on established treatment programs. When patients were asked about their general level of knowledge about their kidney disease, only 23% of patients reported great or extensive knowledge; 35% reported having very limited or no knowledge about their kidney disease. 43% of the patients reported not being aware of HD, 57% were not aware of continuous ambulatory peritoneal dialysis (CAPD), 66% were not aware of automated PD, and 56% were not aware of transplantation.<sup>17</sup>

This study did not implement pre-dialysis information prior to starting said survey, it was based on the number of consultations attended and progression of the disease of the patients, where a significant improvement was found in the perception of the patients of their knowledge of the modalities with a higher frequency of nephrology visits. We

found similar limitations between both studies, where patient education was assessed using a questionnaire and patients reported their perceived level of knowledge. The actual knowledge of the patient was not tested.

Regarding the type of RRT, Maaroufi et al and Velasco et al showed that PD was more preferred among patients who received prior pre-dialysis information compared to those who did not, finding a significant difference between both results.<sup>10,13</sup> However, we confirm with previous studies that if patients are given a free and informed choice of RRT modalities, most of them express a preference for PD.

This is important since our hospital has a greater number of patients on HD, due to the clinical conditions at the time of starting dialysis (usually symptoms such as acute pulmonary edema, seizures, vomiting, arrhythmias due to hyperkalemia, requiring urgent start of dialysis).<sup>16</sup> Also, despite the fact that kidney transplantation has been associated with a better quality of life in patients with end-stage CKD, we observed that it has not been the most preferred treatment, similar to what has been reported in other studies.<sup>14</sup>

In our research, we see that the majority of patients would reject or limit themselves to starting HD since distance is a limiting factor for said therapy, showing that 35% would prefer PD and 30% would prefer kidney transplantation. Morton et al show that this can be caused by the ability of the patient and caregiver to travel during dialysis therapy, in addition to some limitations such as the lack of available centers near their home or travel destinations, or even the cost that deserves to do them. From this perspective, peritoneal dialysis, while not completely unrestricted, may seem more attractive to CKD patients because it has relatively fewer limitations both in travel time, location, and in the comfort of their homes.<sup>18,19</sup>

Most of the patients who chose PD were male, however, with the small sample obtained, it may not be relevant, compared to the studies by Dimitrios et al and Juan et al where sex had no significant difference for the choice of therapy modality despite the large sample obtained.<sup>7,17</sup> Regarding the employment situation, the majority of those surveyed stated that they were employed, with a greater preference for PD. This could suggest that work potential may be practically restricted by the time constraints associated with HD.<sup>7,19</sup> In association with marital status, the PD was preferentially chosen by those who are married; these results suggest that the choice for the PD is due to living with another person in their home. Dimitrios et al and colleagues point out that patients who live alone may not choose PD simply due to lack of support. In addition, whether they have another person at home is a very important parameter to be able to perform PD. Finally, the choice between age groups, patients <60 years of age, were associated with a preference for PD and renal transplantation, without finding a significant difference between the two, compared to the results obtained in previous publications where age younger was clearly

associated with the selection of PD.<sup>7</sup> However, in the group >60 years of age, the outstanding treatment preference was PD, similar to other studies (Maaroufi et al) where they show that the preference for PD tends to be in elderly patients, since the population handled in said investigation was with a mean age of 71 years.<sup>13</sup>

## CONCLUSION

The level of knowledge perceived about the different RRTs of the patients who receive pre-dialysis information is good, impacting the decision regarding their renal replacement treatment, with peritoneal dialysis being more preferred. The most important factors that influenced the choice of patients regarding the treatment modality were the distance from the hemodialysis center to their homes, age, marital status, and work activity.

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