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## **The Impact of Remote Monitoring on Quality of Life, Mental Health, and Clinical Outcomes in Automated Peritoneal Dialysis Patients During the COVID-19 Pandemic**

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**Objectives :** The recent outbreak of the novel coronavirus (SARS-CoV-2) has further restricted in-person medical visits. These societal needs, combined with the inherent limitations of peritoneal dialysis (PD) treatment, have highlighted certain challenges. In this study, we aim to compare various clinical indicators between Automated Peritoneal Dialysis (APD) patients using Remote Therapy Monitoring (RTM) and those who do not.

**Methods :** This study is a randomized controlled trial (RCT) involving 15 patients. Participants underwent open-label APD therapy for 12 months, with or without the concurrent use of RTM, based on randomization. Utilizing the RTM program, physicians login to a secure online platform to monitor the progress of peritoneal dialysis, including drainage volume, blood pressure, weight, machine alarms, and other relevant data. Quality of Life (QOL) assessments were conducted through surveys at 0, 6, and 12 months.

**Results :** Mann-Whitney U test showed that RTM group had a higher phase angle at 6 months (4.6 (4.2 - 5.4) vs. 3.6 (2.9 - 3.9),  $p = 0.012$ ), at 12 months (4.2 (4.1 - 4.7) vs. 3.6 (2.6 - 3.7),  $p = 0.027$ ), lower PD prescription changes (0.0 (0.0 - 1.3) vs. 4.0 (3.0 - 6.0),  $p = 0.032$ ), lower peritonitis incidence (0.0 (0.0 - 0.0) vs. 0.0 (0.0 - 2.0),  $p = 0.038$ ), lower hospitalization (0.5 (0 - 1) vs. 2 (2 - 3),  $p = 0.053$ ) than those of APD only group. Additionally, no significant difference was observed in QOL assessments between the two groups.

**Conclusions :** This study suggests that RTM can have a positive impact on the clinical outcomes of patients undergoing APD.

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Table 1. 6months, 12months follow up results

	Months	Total	APD with RTM	APD only	p-value
Number of patients		17	9	8	
KDQOL-36	6	79 (77 - 88)	80.5 (77.25 - 88.00)	79.00 (77.00 - 92.00)	0.735
	12	79 (74 - 84)	77.50 (73.25 - 83.25)	80.00 (78.00 - 84.00)	0.596
BDI	6	16 (9 - 22)	16.00 (8.75 - 23.25)	16.00 (9.00 - 21.00)	0.809
	12	16 (9 - 25)	18.50 (5.75 - 22.75)	14.00 (11.00 - 26.00)	0.736
CES-D	6	9 (4 - 13)	8.50 (3.50 - 10.00)	12.00 (6.00 - 19.00)	0.699
	12	8 (2 - 17)	9.50 (1.50 - 13.25)	6.00 (3.00 - 29.00)	0.500
PHQ-9	6	4 (3 - 8)	5.00 (2.75 - 6.50)	4.00 (3.00 - 8.00)	0.961
	12	6 (3 - 15)	5.50 (2.50 - 10.00)	6.00 (3.00 - 15.00)	0.734
KtV	6	1.59 (1.29 - 2.06)	1.795 (1.41 - 2.11)	1.47 (1.29 - 1.84)	0.564
	12	1.79 (1.38 - 2.08)	1.585 (1.31 - 2.095)	1.81 (1.55 - 2.08)	0.630
Overhydration	6	2.50 (1.30 - 4.10)	1.65 (1.125 - 2.50)	3.20 (2.50 - 4.30)	0.149
	12	2.50 (1.00 - 4.10)	1.60 (0.925 - 2.90)	3.90 (2.30 - 4.30)	0.336
Phase angle	6	3.92 (3.47 - 4.57)	4.565 (4.1675 - 5.3875)	3.55 (2.89 - 3.87)	0.012
	12	4.08 (3.25 - 4.52)	4.205 (4.095 - 4.735)	3.25 (2.61 - 3.67)	0.027
GNRI	6	95.00 (92.00 - 101.00)	99.00 (94.25 - 102.250)	94.00 (91.00 - 97.00)	0.100
	12	98.00 (92.00 - 101.00)	100.00 (97.00 - 101.00)	94.00 (89.00 - 98.00)	0.110
Home visits		0 (0 - 1)	0.5 (0 - 1.0)	0 (0 - 0)	0.306
OPD visits		14 (12 - 24)	13.5 (12.00 - 14.75)	23 (12 - 25)	0.310
ER visits		1 (0 - 2)	0 (0 - 1.25)	1 (1 - 2)	0.190
Unplanned hospital visits		1 (0 - 2)	0.50 (0 - 1.25)	1 (0 - 2)	0.312
Hospitalization		1 (0 - 2)	0.5 (0 - 1)	2 (2 - 3)	0.053
Called by PD nurse		4 (3 - 6)	3.5 (3.0 - 4.5)	5 (4 - 6)	0.378
PD prescription change		2 (0 - 5)	0 (0 - 1.25)	4 (3 - 6)	0.032
Exchanges over telephone		1 (0 - 2)	0.5 (0 - 1.25)	1 (1 - 3)	0.162
Peritonitis		0 (0 - 0)	0 (0 - 0)	0 (0 - 2)	0.038

