

## RESEARCH LETTER

## Nephrologists' Perspectives on Home Dialysis Utilization: A National Survey From Israel



To the Editor:

In 2021, 8.4% of 6,990 patients treated with maintenance dialysis in Israel received peritoneal dialysis (PD), with home hemodialysis (HD) not widely available.<sup>1</sup> A Kidney Disease Improving Global Outcomes conference highlighted the variation in home dialysis utilization across high-income countries (72% of patients in Hong Kong and 3% of patients in Japan), citing local resources, health care reimbursement, and infrastructure as possible explanations.<sup>2,3</sup>

Why is home dialysis utilization in Israel low relative to other countries? We surveyed nephrologists in Israel about their current knowledge, opinions, and attitudes toward home dialysis to gain insights into Israel's relatively low PD uptake. Israel has National Health Insurance, which provides comprehensive dialysis coverage across 4 competing health plans. The Ministry of Health pays each health plan equal and fixed funds to cover all medical costs, independent of dialysis modality.<sup>4</sup> Fifty-five percent of HD patients receive dialysis in private, for-profit units, whereas the remaining patients receive it in public hospitals. Of note, PD is provided in Israel exclusively in public hospitals.<sup>1,4</sup>

Israeli nephrologists anonymously completed an electronic survey from a previously adapted questionnaire (Item S1).<sup>5</sup> The questions included are follows: 1) demographics, 2) services available at the institution, 3) perceived reasons for PD underutilization, and 4) attitudes regarding home HD. The Rabin Medical Center's Institutional Review Board waived ethics approval. Additional methods are provided in Item S2.

Sixty-four physicians of 184 registered nephrologists (35%) answered the survey. Only 17 (27%) routinely provide care for patients receiving PD. The demographic

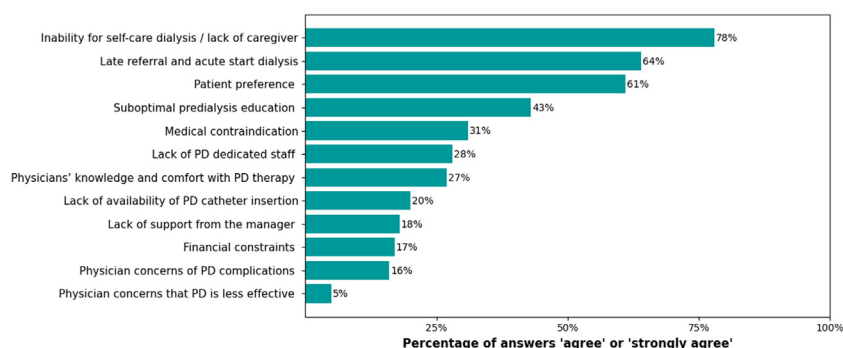
data of the respondents is summarized in Table S1. Ninety-one percent (n = 58) of the respondents acknowledged that the current use of PD in Israel should be higher. Sixty percent (n = 38) felt that the utilization of PD should be between 16% and 29%, whereas 31% (n = 20) felt that the utilization of PD should be >30% of the prevalent patients.

Regarding predialysis education, 91% of the participants reported a program at their center that consisted of a dedicated predialysis clinic (86%), and a dedicated nurse (81%). The majority (71%) reported that the nephrologist provides most of the predialysis education at their center. Nearly 40% of the nephrologists were satisfied with the modality education in the outpatient clinic, whereas 44% pointed to limited time as a barrier to optimal modality education.

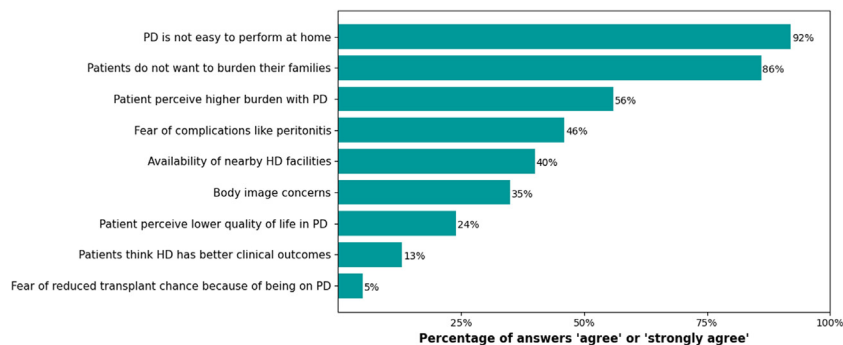
Perceived barriers to PD utilization are presented in Figure 1 and Table S2. The main barriers, graded as either "agree" or "strongly agree," were as follows: 1) concern regarding inability for self-care dialysis/absence of a caregiver (n = 50, 78%), 2) late referral and urgent-start dialysis (n = 41, 64%), and 3) patients' preferences (n = 39, 61%). The most common patient-perceived barriers to PD, reported as either "agree" or "strongly agree," were as follows: 1) patients' perceptions that PD is not easy to perform at home (n = 59, 92%), 2) patients feel that PD is a burden to their family (n = 54, 86%), and 3) patients perceive a higher care burden with PD (n = 36, 56%) (Fig 2; Table S3).

When asked what dialysis modality they would opt for if they were to need dialysis, 33 respondents (56%) chose PD, 19 (32%) chose home HD, and 7 (12%) respondents chose in-center HD. None of the PD-treating physicians chose in-center HD (Fig S1). When asked about the strongest purported benefits to justify bringing home HD to Israel, 94% of the respondents chose superior quality of life, 47% chose better clinical outcomes, and 31% chose superior cost effectiveness.

Our study emphasizes that a major barrier to PD utilization is the inability of the patient to perform



**Figure 1.** Nephrologists' perceived barriers to peritoneal dialysis utilization. The survey question was as follows: "How important are the following considerations in your opinion as barriers to PD utilization in Israel." The answer choices were ranked on a 1-5 visual scale from "strongly disagree" to "strongly agree." Further mentioned is the percentage of respondents choosing "agree" or "strongly agree." PD, peritoneal dialysis.



**Figure 2.** Patient-related barriers to peritoneal dialysis as perceived by nephrologists. The survey question was as follows: “Among patients who received modality education, what are the reasons in your opinion for not choosing PD.” The answer choices were ranked on a 1-5 visual scale from “strongly disagree” to “strongly agree.” Further mentioned is the percentage of participants choosing “agree” or “strongly agree.” HD, hemodialysis; PD, peritoneal dialysis.

self-care dialysis or the absence of a caregiver. Self-care treatment, particularly among the elderly population, is limited by physical and cognitive limitations.<sup>6</sup> Implementation of assisted PD in Israel using community-based home care to perform PD at the patient’s home requires consideration. Across Europe and Canada, assisted PD has been shown to improve PD eligibility and PD use among the elderly and those with cognitive and functional limitations in the absence of a caregiver or family support.<sup>6,7</sup>

Another barrier to PD utilization cited was late referral and acute start dialysis. Unplanned dialysis starts to occur for as many as 40%-60% of new patients receiving dialysis.<sup>8</sup> Only a minority received home-based therapies.<sup>9</sup> One-third of the respondents rarely suggested conversions from in-center HD to PD. Inpatient education after an urgent-start HD can increase the choice of home dialysis.<sup>10</sup> In Israel, a widespread and urgent-start education program regarding dialysis treatment options is needed.<sup>10,11</sup>

Most respondents noted patients’ preferences as a major reason for not choosing PD, particularly the treatment team’s perception that the patient may perceive PD as complicated and burdensome. Fellowship training in home dialysis and greater exposure to PD during training, together with PD-focused education among physicians, might modify nephrologists’ perceptions regarding PD. A robust predialysis patient-centered education program is also needed with a multidisciplinary team that can help formally engage patients in shared decision making in assessing an individual’s priorities and values in choosing a dialysis modality.

Respondents also highlighted system-related barriers for low PD use, such as lack of PD dedicated staff ( $n = 18$ , 28%), lack of availability of PD catheter insertions ( $n = 13$ , 20%), and lack of managerial support ( $n = 11$ , 17%). Growing PD programs necessitates investments in human resources, infrastructure, and supportive services, such as improving access to PD catheter insertion. These higher upfront costs may eventually lead to downstream cost savings with increased PD utilization.

Interestingly, one-third of nephrologists would choose home HD if they were to need dialysis. Given that home HD is not universally available in Israel, it provides important justification to explore its implementation, particularly for the cited reasons of improved clinical outcomes and quality of life.

Study limitations include a lack of survey validation, a low response rate, and the inability to identify duplicate responses.

In conclusion, this study underscores that major barriers to PD use in Israel are similar to those encountered across other high-income countries. Nephrologists’ perception of underutilization of PD, coupled with favorable reimbursement in Israel, justifies the need for action to increase home dialysis use, with the following steps to be evaluated: 1) more detailed and systematic evaluation, implementation, and monitoring of high-quality modality education across health plans and including inpatient treatment starting with dialysis; 2) implementation and evaluation of an assisted PD pilot program; 3) exploration of the role of an urgent-start PD and education options for unplanned dialysis starts; and 4) widespread implementation and availability of home HD.

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## SUPPLEMENTARY MATERIAL

### Supplementary File (PDF)

**Figure S1:** Response to dialysis modality question by physicians who manage patients with PD versus those who not.

**Item S1:** Nephrologist survey—opinions regarding home dialysis in Israel

**Item S2:** Supplementary methods

**Table S1:** Demographics of the Participating Nephrologists

**Table S2:** Nephrologists’ Perceived Barriers to PD utilization

**Table S3:** Patients’ Barriers to PD as Perceived by Nephrologists

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## REFERENCES

1. *National Registry for Dialysis and Kidney Transplantation 2021*. Israel Center for Disease Control. Ministry of Health; 2022. Accessed June 5, 2022. <https://www.gov.il/he/Departments/publications/reports/dialysis-in-israel-2021>
2. Chan CT, Blankestijn PJ, Dember LM, et al. Dialysis initiation, modality choice, access, and prescription: conclusions from a Kidney Disease: Improving Global Outcomes (KDIGO) controversies conference. *Kidney Int*. 2019;96(1):37-47.
3. United States Renal Data System. *2021 USRDS Annual Data Report: Epidemiology of kidney disease in the United States*. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases; 2021.
4. Haviv YS, Golan E. Global dialysis perspective: Israel. *Kidney360*. 2020;1(2):119-122.
5. Dahlan R, Qureshi M, Akeely F, Al Sayyari AA. Barriers to peritoneal dialysis in Saudi Arabia: nephrologists' perspectives. *Perit Dial Int*. 2016;36(5):564-566.
6. Oliver MJ, Quinn RR, Richardson EP, Kiss AJ, Lamping DL, Manns BJ. Home care assistance and the utilization of peritoneal dialysis. *Kidney Int*. 2007;71(7):673-678.
7. van Eck van der Sluijs A, van Jaarsveld BC, Allen J, et al. Assisted peritoneal dialysis across Europe: practice variation and factors associated with availability. *Perit Dial Inter*. 2021;41(6):533-541.
8. Hassan R, Akbari A, Brown PA, Hiremath S, Brimble KS, Molnar AO. Risk factors for unplanned dialysis initiation: a systematic review of the literature. *Can J Kidney Health Dis*. 2019;6:1-14.
9. Hussein WF, Bennett PN, Schiller B. Innovations to increase home hemodialysis utilization: the transitional care unit. *Adv Chronic Kidney Dis*. 2021;28(2):178-183.
10. Rioux JP, Chema H, Bargman JM, Watson D, Chan CT. Effect of an in-hospital chronic kidney disease education program among patients with unplanned urgent-start dialysis. *Clin J Am Soc Nephrol*. 2011;6(4):799-804.
11. Hingwala J, Bhola C, Lok CE. Using tunneled femoral vein catheters for "urgent start" dialysis patients: a preliminary report. *J Vasc Access*. 2014;15(7):S101-S108.