

Patient-identified barriers to elective dialysis initiation in Singapore: A cross-sectional study

Samantha Hui Ling Cheong^{1,3} MBBS, Jia Hong Koh² MBBS, Christopher Cheang Han Leo¹ MB ChB, Emmett Tsz Yeung Wong^{1,4} MBBS, Wei-Zhen Hong^{1,3} MBBS, Priyanka Khatri^{1,3,4} MBBS

Dear Editor,

Unplanned dialysis, defined as the initiation of dialysis without a definitive vascular or peritoneal access, remains a significant challenge in the management of end-stage kidney disease (ESKD). Compared to planned dialysis, it is associated with increased mortality, higher healthcare costs, reduced quality of life and productivity.¹ A Canadian study reported potential cost savings up to CAD 16.1 million dollars annually with a 50% reduction in unplanned dialysis initiation.² In Singapore, planned initiation of haemodialysis (HD) stands at a dismal 15%,³ with the authors' institution, the National University Hospital (NUH), Singapore fairing only slightly better, at 30%. These findings highlight the urgent need for strategies to promote uptake of elective dialysis initiation.

In a US 2013 and Australian 2016 study, limited health literacy was reported in 10–50% of patients with chronic kidney disease (CKD),⁴ with knowledge gaps about CKD persisting despite 1 year of standard outpatient nephrology care, highlighting the inadequacies in pre-dialysis education.⁵ A previous study from Singapore by Griva et al. reported various psychosocial factors such as lack of symptoms, fear of dialysis, work-related concerns, burden to loved ones, disruptions to one's lifestyle, risks of access creation, hope for alternative treatment options, and social influences as some of the main patient-related barriers to dialysis initiation.⁶ Studying these patient-related factors is key to streamlining dialysis-related education and counselling. Addressing them may lead to reduced rates of unplanned dialysis initiation and improved overall patient outcomes.

We identified 53 patients with ESKD aged at least 21 years who underwent unplanned HD initiation between June 2019 and May 2020 at NUH, of which 33 consented to the study and completed survey questionnaires from June 2020 to December 2021. The 17-item questionnaire was developed based on

available literature and divided into 3 sections: the first section assessed patients' demographics and socio-economic status; the second section identified factors leading to their initial decision against elective dialysis initiation and the subsequent impact of dialysis on their lifestyles; the final section focused on identifying additional information and resources that may have facilitated an earlier decision about elective dialysis start. Surveys were conducted in English or Mandarin by the authors.

We examined the socioeconomic determinants of timely dialysis initiation. Financial concerns played a key role in dialysis decision-making, with 94% of patients citing cost concerns as a deterrent to dialysis initiation. Post-initiation, 75% of patients perceived increased financial strain, consistent with prior studies.⁶ In this study's cohort, 75% had a per capita monthly household income below SGD 2800. In Singapore, dialysis is heavily subsidised, with per capita income of less than SGD 2800 being provided 20–75% of government subsidies.⁷ Despite the government support, the perceived financial burden of dialysis remains high. This perceived lack of financial support was similarly illustrated in a 2020 Singapore study by Hwang et al.⁸ and suggests a gap in patients' understanding and accessibility to financial resources, emphasising the need for improved communication between healthcare providers, administrators and patients. Further-more, 75% of patients received education up to secondary school level or lower. Lower socioeconomic status and education levels have previously been reported to correlate with a higher likelihood of unplanned dialysis initiation and poor survival outcomes in patients with ESKD.⁹ These findings underscore the need for targeted strategies to mitigate disparities in dialysis preparedness among the socially disadvantaged.

Physician recommendations and worsening symptoms associated with CKD progression were key factors influencing dialysis initiation in this study.

The Annals is an open access journal, allowing non-commercial use under CC BY-NC-SA 4.0.

¹ Division of Nephrology, Department of Medicine, National University Hospital, Singapore, Singapore

² Department of Medicine, National University Hospital, Singapore, Singapore

³ Fast and Chronic Programmes, Alexandra Hospital, Singapore

⁴ Department of Medicine, Yong Loo Lin School of Medicine, National University of Singapore, Singapore

Correspondence: Dr Samantha Hui Ling Cheong, National University Health System (NUHS) Tower Block, 1E Kent Ridge Road, Level 10, Singapore 119228. Email: samantha_hl_cheong@nuhs.edu.sg

Accepted: 9 September 2025

Published Online First: 30 October 2025

This is consistent with previous literature showing that patients referred early to a nephrologist are more likely to receive definitive vascular access.¹⁰ The caveat, however, is that interpersonal trust is established through repeated interactions,^{10,11} and although healthcare providers are deemed to be key influencers in decision-making, the impact of recommendations varies in accordance to the level of trust established with patients and their families.¹² Early nephrology referrals provide opportunities to build the trust between physicians and patients.

In this study's cohort, only 16% of participants involved their family members in the initial decision-making process for dialysis initiation, but 34% eventually started dialysis after shared discussions with their families. There were 40% of patients who reported that family and social support played a role in their decision to initiate dialysis. Good family support facilitates adjustment to the significant lifestyle changes that are required post-dialysis. These findings underscore the need for early involvement of patients' families and caregivers in this complex decision-making process. Besides family, peer influence plays an important part in pre-dialysis education.⁶ Many participants felt that first-hand experiences, such as listening to testimonials from dialysis patients, in-person viewing of the dialysis centre, or observation of an actual patient undergoing dialysis, would have helped them make an earlier decision regarding dialysis initiation. Previous studies have also shown that peer influences are as important as input from healthcare providers,⁶ with some patients valuing peer stories more than physicians' recommendations when selecting a dialysis modality.¹²

Other significant barriers to dialysis initiation included concerns about a lower quality of life (81%), difficulties with travel (72%), fear of dialysis dependence (69%) and fear of surgery for access creation (69%). Despite these initial concerns, 88% of patients did not regret initiating dialysis, suggesting that most patients felt that the challenges associated with undergoing dialysis were reasonable trade-offs for a longer life expectancy. In this cohort, only 65% of patients recalled ever receiving counselling by a renal coordinator, of which almost 40% felt the resources provided were inadequate for a comprehensive understanding of dialysis. These findings are similar to previous studies where patients reported a suboptimal understanding of dialysis and access issues despite attending 2 or more counselling sessions by a renal coordinator.⁶ This suggests that the timing and reinforcement of pre-dialysis education are crucial for adequate retention of knowledge about dialysis modalities over time.

A summary of various barriers perceived by patients and potential solutions is presented in Table 1.

This study has several limitations including its single-centre design, small sample size and potential recall bias as the questionnaires were conducted after the initiation of dialysis. The questionnaire used in our study has not been validated. However, there is currently no validated tool available to identify barriers to unplanned dialysis initiation.

Our study found that perceived barriers to elective dialysis initiation remain consistent with those identified in previous Singapore studies published in 2019 and 2020. The novelty of this study lies in its direct engagement with patients, identifying aspects in care that could have been optimised to aid their decision-making process and capturing their suggestions on how to improve uptake of elective dialysis. We propose the following targeted strategies, partially based on the responses from the study participants. Renal counselling should be individualised, and repeated sessions should be arranged where necessary, to increase patients' health literacy about dialysis.⁷ Counselling should include information about lifestyle and dietary changes post-dialysis initiation and setting realistic expectations regarding symptom improvement. Additionally, we advocate for the inclusion of dialysis centre visits as part of renal counselling or the use of videos to demonstrate the dialysis process. Since physician recommendations and family support are known to influence patients' acceptance of elective dialysis, we propose a multidisciplinary counselling approach that includes the renal coordinator, nephrologist, patient and family members in a joint session to support informed decision-making.

Ethics statement

Ethics approval was obtained from National Healthcare Group Domain Specific Review Board (DSRB 2020/00554-SRF0001).

Declaration

The authors declare there are no affiliations with or involvement in any organisation or entity with any financial interest in the subject matter or materials discussed in this manuscript.

Acknowledgement

The authors thank the NUHS renal coordinators for providing renal counselling for our patients and Ms Valerie Ma for providing the original study database.

Keywords: dialysis, elective dialysis initiation, end-stage kidney disease, nephrology, renal counselling

Table 1. Barriers to elective dialysis initiation and proposed strategies to increase uptake of elective dialysis initiation.

Thematic domains	Perceived barriers	Illustrative quotes from patients	Proposed targeted solutions
Financial	Dialysis would pose a significant financial burden	"I have had a loss of income as I am now unable to spend many hours working."	Initiate early financial counselling, involving medical social workers
		"My expenses have increased."	Evaluation of eligibility for voluntary welfare organisation subsidies prior to dialysis initiation
		"I have to arrange for ambulance transport to my dialysis center which causes financial strain."	
		"I have cut down on outings to cut my spendings."	
		"I will be unable to eat food that I like or drink beverages that I want in the amount I want."	Structured, individualised and repetitive education programme
Knowledge gaps and fears	Dietary modifications and restrictions post-dialysis initiation	"(I wish I was told) what alterations to meals would be required after commencing on dialysis."	Pre-dialysis counselling to include aspects on lifestyle changes, dietary changes and symptom improvement
		"I fear blood, needles, pain and poor cosmesis."	Use of videos to demonstrate the dialysis process
		"I worry about the lethargy post-dialysis and about pain and discomfort during dialysis."	Visits to dialysis centre
		"I wish I knew about the duration of each dialysis session and the amount of time commitment it would require."	Testimonials from existing dialysis patients
		"I did not expect that dialysis involved so much usage of needles. I am fearful of needles and I wish I was pre-empted about this."	
Family and social support	Misconception that making decisions about dialysis initiation does not require family involvement	"Fear of dialysis is a major factor influencing decision not for dialysis initially hence it is important for patients to hear about first-hand dialysis experience from current patients undergoing dialysis to help allay their fears. I feel that dialysis counsellors themselves have not undergone dialysis before and hence do not fully understand what dialysis entails and hence are not adequately equipped to counsel patients on dialysis."	
		"Having a video clip to show patients what dialysis is like will help to decrease the fear and encourage people to initiate dialysis."	
		"(Post-dialysis initiation), I feel that my family support has increased and my family is more tight-knitted now."	Active involvement of family members and caregivers in pre-dialysis counselling sessions
		"I have reduced self-confidence."	Peer support groups and psychosocial counselling
		"My mother and sister were on dialysis and they had poor health, I do not want to turn out like them."	
		"I am scared that dialysis will kill me as I have had 2 friends who underwent dialysis and passed away."	

REFERENCES

1. Takagi K, Mizuno M, Kawase K, et al. Impact on survival of urgent dialysis initiation in patients with end-stage renal disease: a case-control study. *Clin Exp Nephrol* 2020;24:1154-61.
2. Mendelssohn DC, Malmberg C, Hamandi B. An integrated review of “unplanned” dialysis initiation: reframing the terminology to “suboptimal” initiation. *BMC Nephrol* 10:22.
3. Ramachandran R, Bhargava V, Jasuja S, et al. Interventional nephrology and vascular access practice: A perspective from South and Southeast Asia. *J Vasc Access* 2022;23:849-60.
4. Dageforde LA, Cavanaugh KL. Health literacy: emerging evidence and applications in kidney disease care. *Adv Chronic Kidney Dis* 2013;20:311-9.
5. Gray NA, Kapojos JJ, Burke MT, et al. Patient kidney disease knowledge remains inadequate with standard nephrology outpatient care. *Clin Kidney J* 2016;9:113-8.
6. Griva K, Seow PS, Seow TY, et al. Patient-Related Barriers to Timely Dialysis Access Preparation: A Qualitative Study of the Perspectives of Patients, Family Members, and Health Care Providers. *Kidney Med* 2020;2:29-41.
7. Ministry of Health, Singapore. Subsidies for Residential Long-Term Care Services. <https://www.moh.gov.sg/managing-expenses/schemes-and-subsidies/subsidies-for-residential-long-term-care-services/>. Accessed 29 October 2025.
8. Hwang SJ, Tan NC, Yoon S, et al. Perceived barriers and facilitators to chronic kidney disease care among patients in Singapore: a qualitative study. *BMJ Open* 2020;10:e041788.
9. Khattak M, Sandhu GS, Desilva R, et al. Association of education level with dialysis outcome. *Hemodial Int* 2012; 16:82-8.
10. Smart NA, Dieberg G, Ladhani M, et al. Early referral to specialist nephrology services for preventing the progression to end-stage kidney disease. *Cochrane Database Syst Rev* 2014:CD007333.
11. Pearson SD, Raeke LH. Patients’ trust in physicians: many theories, few measures, and little data. *J Gen Intern Med* 2000; 15:509-13.
12. Winterbottom AE, Bekker HL, Conner M, et al. Patient stories about their dialysis experience biases others’ choices regardless of doctor’s advice: an experimental study. *Nephrol Dial Transplant* 2012;27:325-31.