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Association-between Personal Hygiene and Peritonitis, Hemodialysis Transfer, and Survival in Patients on Peritoneal Dialysis

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INTRODUCTION:

Peritonitis is a serious complication in patients on PD, significantly contributing to morbidity, mortality, and HD transfer. This study aimed to evaluate the association between self-reported hygiene behaviors and key clinical outcomes in a large cohort of PD patients.

METHODS:

- This prospective cohort study used data from the Thailand Peritoneal Dialysis Outcomes and Practice Patterns Study (PDOPPS).
- Participants aged ≥18 years were randomly selected, including 10–15 incident and 20–30 prevalent PD patients from 22 centers, each managing at least 20 PD patients.
- Centers were selected from a pool of 140 eligible PD facilities across the country.
- Hygiene behavior was assessed through a self-reported questionnaire addressing personal cleanliness, hand hygiene, and oral care.
- Primary outcomes included peritonitis incidence, HD transfer, and mortality.
- Time-to-event analyses utilized the Kaplan-Meier method, with hazard ratios (HRs) estimated via multivariable Cox proportional hazards regression. Poisson regression models calculated incidence rate ratios (IRRs) for clinical outcomes.

RESULTS:

- Among 5,090 PD patients, 680 completed the hygiene behavior questionnaire, with 6% classified as having poorer hygiene, significantly associated with diabetes and caregiver dependency.
- Poor hygiene behavior increased the risk of **peritonitis** by 57% (adjusted IRR 1.57) and **HD transfer** by 2.45-fold (adjusted IRR 2.45) (Table 1 and Figures 1-3).
- The mortality rate was higher in the poorer hygiene group (36% vs. 29%), though not statistically significant (adjusted IRR 1.33).
- **Poor hand hygiene and nail grooming** were strongly linked to increased peritonitis risk, with adjusted IRRs of 1.27 and 1.70, respectively.
- Poor hygiene behavior was significantly associated with a 3-fold **higher risk of culture-negative peritonitis (AHR 3.02)**, emphasizing the need for targeted interventions.

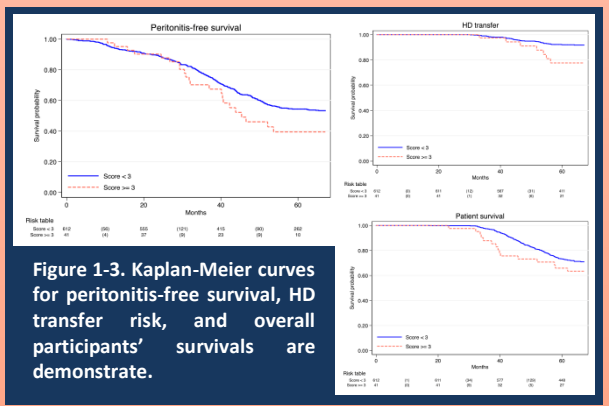

Figure 1-3. Kaplan-Meier curves for peritonitis-free survival, HD transfer risk, and overall participants' survivals are demonstrate.

RESULTS:

- **Strengths:** Large, multi-center cohort with a comprehensive hygiene behavior assessment, long follow-up (median 40.3 months), and high event rates enhance generalizability and statistical power.
- **Limitations:** Self-reported data may introduce bias, the questionnaire lacks prior validation, and the observational design limits causal inferences, with potential underrepresentation of patients with poorer functional status.

Table 1: IRRs of Peritonitis, HD Transfer, and Mortality by Hygiene Behavior Score.

Outcomes	Behavior Hygiene	
	Poorer (*N* = 42)	Better (*N* = 627)
Peritonitis*		
Incidence proportion (n/N)	55% (23/42)	46% (287/627)
Incidence rate (episodes per pt-years)	0.25	0.16
Unadjusted IRR[a]	1.59 (95%CI 1.16, 2.14)	reference
Adjusted IRR[a,c]	1.57 (95%CI 1.05, 2.33)	reference
Hemodialysis transfer		
Incidence proportion (n/N)	17% (7/42)	8% (52/627)
Incidence rate (episodes per pt-years)	0.03	0.02
Unadjusted HR[a]	2.32 (95%CI 1.05, 5.11)	reference
Adjusted HR[a,c]	2.45 (95%CI 1.07, 5.61)	reference
Death		
Incidence proportion (n/N)	36% (15/42)	29% (180/627)
Incidence rate (episodes per pt-years)	0.07	0.06
Unadjusted HR[a]	1.40 (95%CI 0.83, 2.38)	reference
Adjusted HR[a,c]	1.33 (95%CI 0.78, 2.28)	reference

[a]Cox proportional hazard regression; [b]Poisson regression incidence rate ratio; [c]Adjusted for age, sex, PD vintage, comorbidities (diabetes, congestive heart failure, coronary artery disease, and cerebrovascular disease), shared frailty by study sites, serum albumin, and after multiple imputations and accounting for facility clustering.
*Relapsing episode was counted at once

CONCLUSION:

Poor hygiene is linked to increased peritonitis and HD transfer in PD patients. Improving hygiene practices may enhance outcomes and sustain PD as a long-term treatment.

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