Title of Abstract:

Pruritus After Kidney Transplantation: A Systematic Review of Prevalence, Trajectories, and Patient-Reported Impact

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Main text:

Background: Pruritus is a well-recognized complication of advanced chronic kidney disease and hemodialysis, affecting up to 35% of patients with chronic kidney disease [1]. Although kidney transplantation generally improves uremic symptoms, the extent to which transplantation resolves pruritus remains uncertain. Persistent pruritus may substantially impair quality of life.

Methods: An unrestricted systematic review was conducted to characterize the prevalence, severity, trajectories, and patient-reported impact of pruritus among kidney transplant recipients (KTRs). PubMed was searched for large-scale studies evaluating pruritus among KTRs. Only full-text studies were eligible for data extraction.

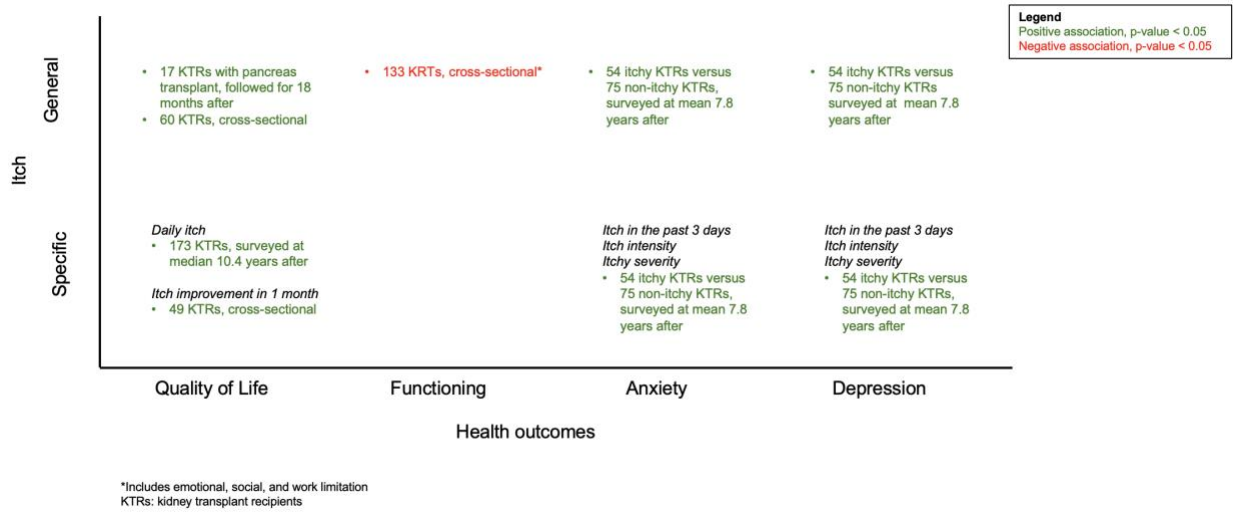
Results: A total of 14 studies (7 cohort, 7 cross-sectional) published between 2004 and 2026 were identified, encompassing 1,321 KTRs and 133 participants in comparison groups. Among studies reporting presence or absence of post-transplant pruritus, 274 of 829 KTRs (33.1%) experienced pruritus. Reported prevalence across individual cohorts ranged from 10.7% to 100%, reflecting differences in study populations, timing of assessment, and methods used to define or measure pruritus. Among 7 studies evaluating pruritus trajectories among KTRs, 4 reported a statistically significant reduction following transplantation. Persistent or de novo pruritus was explicitly characterized in 2 studies, with reported prevalence of 18% and 16%, respectively; both gradual and immediate improvement following transplantation were also described. In the 5 studies describing pruritus duration, assessment periods ranged from the preceding 24 hours or 3 days to several months or years. Descriptions of severity were infrequent; when reported, pruritus was most commonly mild to moderate, although moderate-

to-severe and severe pruritus occurred in a subset. Assessments were collected through questionnaires in 5 studies and standardized instruments, including the Rotterdam Symptom Checklist (n=1), Dermatology Life Quality Index (n=1), KDQOL-SF-36 (n=3), 5-D Itch Scale (n=2), 4-item Itch Scale (n=2), and visual, numerical, or verbal rating scales (n=5), in the remainder; 4 studies incorporated multiple assessment methods. Pruritus was significantly associated with patient-reported health outcomes **(Figure 1)**. Among the 4 studies evaluating associations between pruritus characteristics and other clinical variables, the only statistically significant association found was an inverse relationship between 5-D Itch Scale score and estimated glomerular filtration rate. Comparisons of itch burden across patient groups were reported in 3 studies. Relative to patients receiving hemodialysis, KTRs were 4.6 times less likely to experience moderate-to-severe pruritus [2]. In another study, KTRs reported significantly less itching at 12 months post-transplantation, although this difference was no longer significant at 18 months [3]. Among patients who underwent both kidney and bone marrow transplantation, pruritus was less common than among KTRs who underwent kidney transplantation alone and remained on immunosuppression for a median of 9.3 years at follow-up [4].

Conclusions: Pruritus affects a substantial proportion of KTRs, with approximately one in three recipients experiencing post-transplant pruritus in studies reporting its presence or absence. Although pruritus generally improves following transplantation, persistent and de novo pruritus remain prevalent and may represent an underrecognized clinical challenge. Given the association between post-transplant pruritus and impaired patient-reported health outcomes, further

investigation into its underlying pathophysiology and potential contributions from immunosuppressive therapy is warranted to inform targeted management strategies.

Figure 1. Aggregated, statistically significant associations of pruritus ("itch") with patient-reported health outcomes in kidney transplant recipients.



*Includes emotional, social, and work limitation
KTRs: kidney transplant recipients

References:

1. Schricker S, Weisshaar E, Kupfer J, Mettang T. Prevalence of Pruritus in a Single Cohort of Long-term Kidney Transplant Recipients. Acta Derm Venereol. 2020 Feb 27;100(4):adv00066. doi: 10.2340/00015555-3421. PMID: 32052851; PMCID: PMC9128945.
2. Andardewi MF, Legiawati L, Wahyudi DT, Marbun MBH, Wibawa LP. The Severity, Quality of Life, and Correlated Factors of Chronic Kidney Disease-associated Pruritus between Hemodialysis and Kidney Transplant Patients: A Cross-sectional Study. Acta Med Indones. 2024 Apr;56(2):176-184. PMID: 39010769.
3. Adang EM, Engel GL, van Hooff JP, Kootstra G. Comparison before and after transplantation of pancreas-kidney and pancreas-kidney with loss of pancreas--a prospective controlled quality of life study. Transplantation. 1996 Sep 27;62(6):754-8. doi: 10.1097/00007890-199609270-00009. PMID: 8824472.
4. Madariaga ML, Spencer PJ, Shanmugarajah K, Crisalli KA, Chang DC, Markmann JF, Elias N, Cosimi AB, Sachs DH, Kawai T. Effect of tolerance versus chronic immunosuppression protocols on the quality of life of kidney transplant recipients. JCI Insight. 2016 Jun 2;1(8):e87019. doi: 10.1172/jci.insight.87019. PMID: 27336062; PMCID: PMC4913782.

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