

Change in Frailty Status in the 12 Months Following Solid Organ Transplantation A Systematic Review and Meta-analysis

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Conclusion

Transplant is associated with a reversal in frailty status 6 to 12 months post-transplant, although heterogeneity was demonstrated across studies. Frailty status seems to plateau after 12 months

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Introduction

With recent advances in surgical techniques and immunosuppressive therapy, solid organ transplantation (SOT) is increasingly accessible to older and more complex patients. Multiple previous studies have shown quality of life improvements in SOT patients post-transplant across age group and despite significant pre-transplant frailty. As such, we are investigating if SOT is associated with a reduction in frailty status post-transplant.

Methods

Studies across five databases between 2000 and 2023 were included if an objective frailty status measurement was used, SOT was performed during the study, and no rehabilitation took place pre- or post-transplant. Included studies were graded for risk of bias using the Newcastle Ottawa Scale. Data extracted from the studies was pooled in a random-effects meta-analysis using the Mantel-Haenszel method.

Results

Across the 12 studies included in the review (6 kidney transplant, 2 liver transplant, 3 lung transplant and 1 heart transplant), there was a total of 3065 transplant recipients (62% male 38% female) with a mean age of 51.35 years old. There is an worsening of frailty status in transplant patient immediately post-transplant. Thereafter, there is a reduction in frailty status 3 months post-transplant sustained 6 – 12 months post-transplant. However, frailty status seems to plateau after this period up to 36 months, based on the 3 studies that did track frailty status beyond 12 months. Five studies were included in the meta-analysis which demonstrated an odds ratio = 0.27 (95% CI, 0.12, 0.59, P = .001, I²= 82%), When the single paper deemed to be of poor quality was removed the remaining four studies demonstrated a reduced odds ratio of being frail at 6-12 months posttransplant (OR 0.45 (95% CI, 0.32, 0.65, P = .001, I²= 13%).

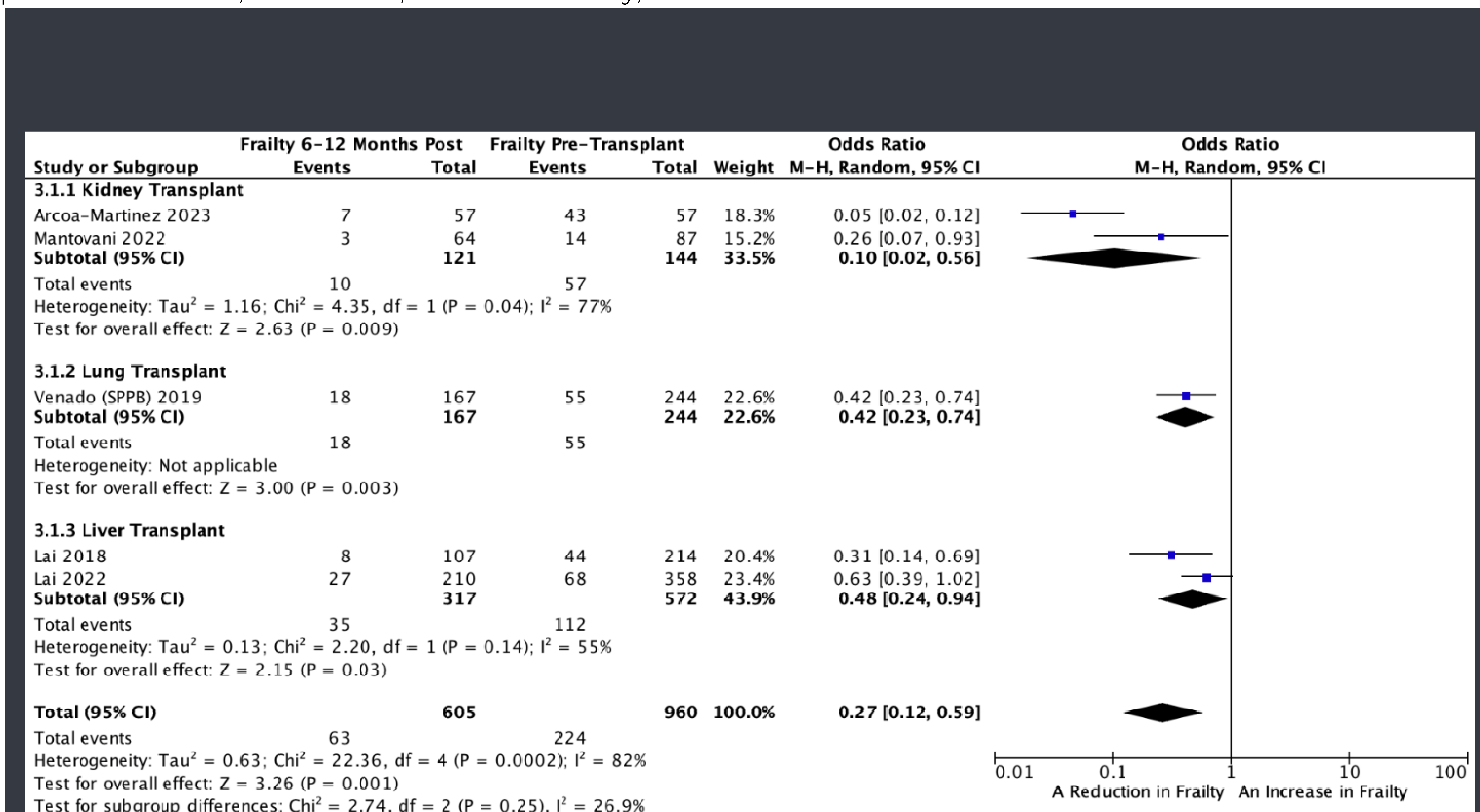


Figure 1: Forest-plot of frailty prevalence at 6 to 12 months post-SOT

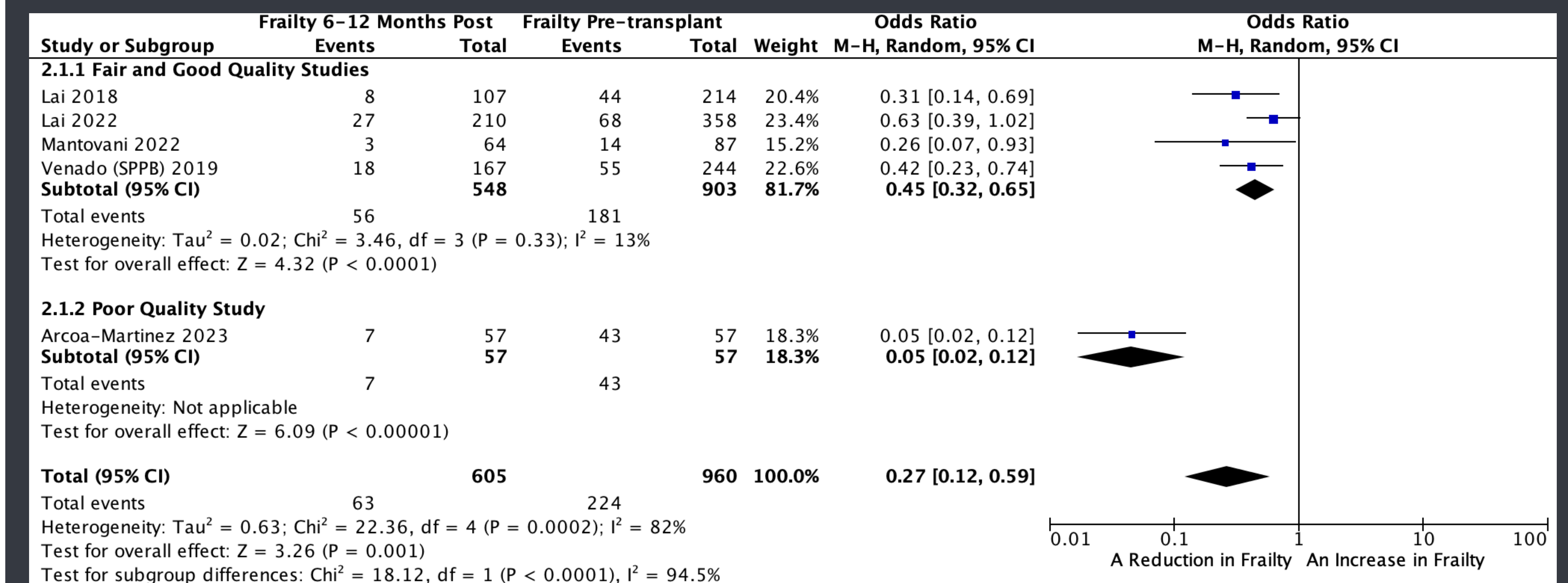


Figure 2: A subgroup analysis of poor vs fair and good quality studies