**INTRODUCTION AND AIMS:** Young adults (YA) receiving renal replacement therapy (RRT) have impaired psychosocial health and are high-risk for graft loss. We aimed to 1) describe their psychological status; 2) explore determinants of quality of life and 3) explore determinants of medication adherence.

**METHODS:** We conducted a cross-sectional online survey for YA on RRT. Additional clinical information was obtained from the United Kingdom Renal Registry. We compared outcomes by treatment modality using age and sex adjusted regression models, having applied survey weights to account for response bias by gender, ethnicity and socioeconomic status. We used multivariate linear regression to examine associations with scores on the 14-item Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS, scale range 14 to 70, with higher scores indicating greater wellbeing) and the 8-item Morisky Medication Adherence Scale (MMAS-8, scale range 0 to 8, with higher scores indicating higher adherence).

**RESULTS:** We recruited 976 YA and 64% responded to the survey - 417 (71%) with transplants and 173 (29%) on dialysis. Compared to transplant, dialysis was associated with: lowered health utility, wellbeing, disease acceptance, independence, patient activation and patient satisfaction; and more psychological disturbances, negative body image and stigma.

The mean WEMWBS score was 47, standard deviation 12, n=535. Positive associations with quality of life (increased WEMWBS score) were: a more extraverted (WEMWBS β coefficient 2.2; 95% confidence interval (CI) 1.2, 3.2; p<0.0001) or open personality (β 1.9; 95% CI 0.7, 3.1; p=0.002), being independent with activities of daily living (β 2.8; 95% CI 1.4, 4.3; p<0.0001), and having above average social support (β 2.5; 95% CI 1.0, 3.9; p=0.001). Negative associations (decreased WEMWBS score) included: having a more neurotic personality (β -2.8; 95% CI -3.9, -1.8; p<0.0001), having greater negative body image (β -1.3; 95% CI -2.4, -0.3; p=0.01), being more stigmatized (β -2.1; 95% CI -3.3, -0.8; p=0.001), having a psychological disturbance (β -7.1; 95% CI -8.8, -5.4; p<0.0001) and receiving dialysis (β -1.8; 95% CI -3.2, -0.3; p=0.02). Gender and age group did not affect quality of life when adjusted for other factors.

Medication adherence was classed as low in 43%, medium in 34% and high in 23% (n=543). Factors associated with a higher medication adherence score were: living with parents (MMAS-8 β coefficient 0.4; 95% CI 0.1, 0.8; p=0.01), a more conscientious personality (β 0.7; 95% CI 0.4, 0.9; p<0.0001), greater satisfaction with access to a doctor (β 0.3; 95% CI 0.1, 0.5; p=0.008), a higher level of patient activation (β 0.2; 95% CI 0.1, 0.4; p=0.008 for trend), male gender (β 0.3; 95% CI 0.01, 1.0; p=0.04) and being aged 16 to <21 years (β 0.5; 95% CI 0.01, 0.5; p=0.05). Factors lowering medication adherence comprised: having an additional condition (β -0.4; 95% CI -0.7, -0.1; p=0.02), receiving dialysis (β -0.6; 95% CI -1.0, -0.3; p<0.001), a lower age of finishing full-time education (β -1.9; 95% CI -0.04, -0.3; p=0.01 for trend), Black and Asian ethnicities (Black β -1.5; 95% CI -2.4, -0.6; p=0.002, Asian β -0.7; 95% CI -1.2, -0.1; p=0.02) and having a psychological disturbance (β -0.7; 95% CI -1.1, -0.4; p<0.001).

**CONCLUSIONS:** This study demonstrates the adverse impact of dialysis treatment on the psychological health of YA on RRT. The reasons why YA remain on dialysis need better understanding. Although some associated variables may be non-modifiable, measuring personality for example in clinical practice could help identify those at higher risk of poor outcomes for close monitoring, greater psychosocial support, or a targeted intervention. Psychological disturbances associated both with lower quality of life and medication adherence, are treatable and may be underdiagnosed.