

## The association between kidney biopsy and socioeconomic deprivation in patients with diabetes

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### Introduction

Patients with diabetic nephropathy are more likely to come from socioeconomically deprived areas and they have poorer outcomes. Diabetic nephropathy is usually a presumptive diagnosis with kidney biopsy reserved for cases with clinical suspicion of non-diabetic renal disease. A lack of consensus on timing and indications for biopsy may result in biopsy practice pattern differences between clinicians. We sought to explore the association between biopsy rates and socioeconomic deprivation in patients diagnosed with diabetic nephropathy in a large tertiary renal centre.

### Methods

The local renal database was used to retrospectively identify patients under the care of nephrology coded as having a primary renal disease of diabetic nephropathy. Diagnoses were further divided as biopsy proven or clinically diagnosed. The National Index of Multiple Deprivation was used to map patient post codes into small areas of relative poverty which were then grouped as quintiles (1 and 5 being most and least deprived quintiles respectively). The numbers of cases of biopsy and clinically diagnosed diabetic nephropathy were respectively calculated for each quintile of relative deprivation. Data on proteinuria and the presence of diabetic retinopathy was collected from the database and compared to levels of deprivation in those patients receiving a biopsy.

### Results

1,515 patients had a primary renal disease of diabetic nephropathy with 35 (2.3%) patients having been diagnosed on kidney biopsy. The median age of patients diagnosed by biopsy was 57 years (IQR: 47-63) and 72 % were male.

Higher deprivation was associated with diabetic nephropathy diagnosed without biopsy (figure 1). In biopsy proven diabetic nephropathy, there were peaks in diagnosis in the most and, to a lesser extent, in the least deprived quintiles.

### DN: diabetic nephropathy

Figure 1. Distribution of patients diagnosed with diabetic nephropathy (with and without biopsy) by relative social deprivation

In the patients receiving a biopsy, median proteinuria was 396 mmol/mol (IQR: 91-890). Lower deprivation was associated with lower proteinuria ( $p=0.043$ ). 61% of biopsied patients had documented diabetic retinopathy but this did not significantly vary with deprivation.

### Discussion

Diabetic nephropathy is associated with increasing deprivation and the vast majority do not have a biopsy. Studies have shown that non-diabetic kidney disease is common in patients with diabetes and our data suggests that despite lower levels of proteinuria, less socially deprived patients with diabetes may be more likely to have a kidney biopsy. This could result in more deprived patients being presumptively misdiagnosed with diabetic nephropathy but conversely expose other patients to unnecessary biopsy risk. Education is one of the measures of social deprivation and better educated patients are known to be more engaged in the management of their health and this could be influencing clinician decision making.

However, there are likely to be unmeasured confounders influencing the decision to biopsy and the absolute number of biopsied patients remains small.