

# Social deprivation increases the risk of acute pancreatitis but does not impact disease severity and mortality

Wei Boon Lim, Francis P Robertson, Manu Nayar, Linda Sharp, Sandip Nandhra, Sanjay Pandanaboyana  
Department of HPB Surgery, Freeman Hospital, Newcastle Upon Tyne, UK.

## Introduction

- The incidence of acute pancreatitis (AP) in the UK has more than doubled in the past two decades.
- Patients with severe AP requires a significant amount of resources for support but the ability to predict which patients will develop severe AP remains poor
- Social deprivation has been linked with increased mortality across surgical specialties
- The aim of this study was to evaluate the impact of social deprivation on outcomes in patients presenting with AP

## Methods

- A prospectively collected single centre database was analysed.
- Deprivation score was quantified using the Index of Multiple Deprivation (IMD) data from the English indices of deprivation 2019, via the patient's postcode
- IMD 1 consists of the 10% most deprived neighbourhood nationally while IMD 10 was the 10% least deprived neighbourhood
- Patients were subsequently grouped into five individual quintiles
- Primary outcome was all-cause mortality while secondary outcome was admission to ICU

## Results

- 396 patients were included in the analysis.
- There was a significantly higher number of patients coming from more deprived backgrounds (**Figure 1**)
- Quintiles were comparable in most baseline demographics
- However, a higher proportion of patients living in more deprived areas were younger, smokers and had ischaemic heart disease (**Figure 2**)

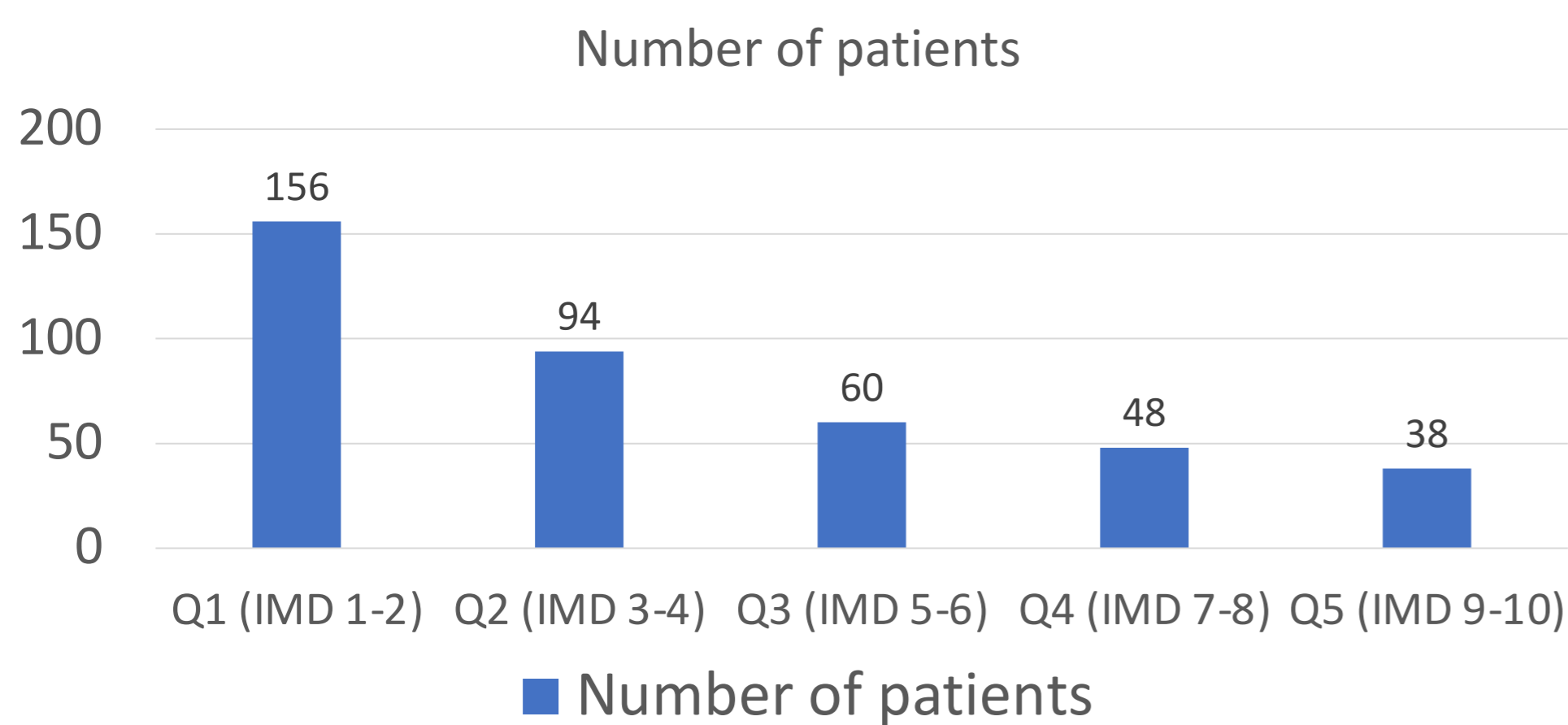


Figure 1: Number of patients in each quintile

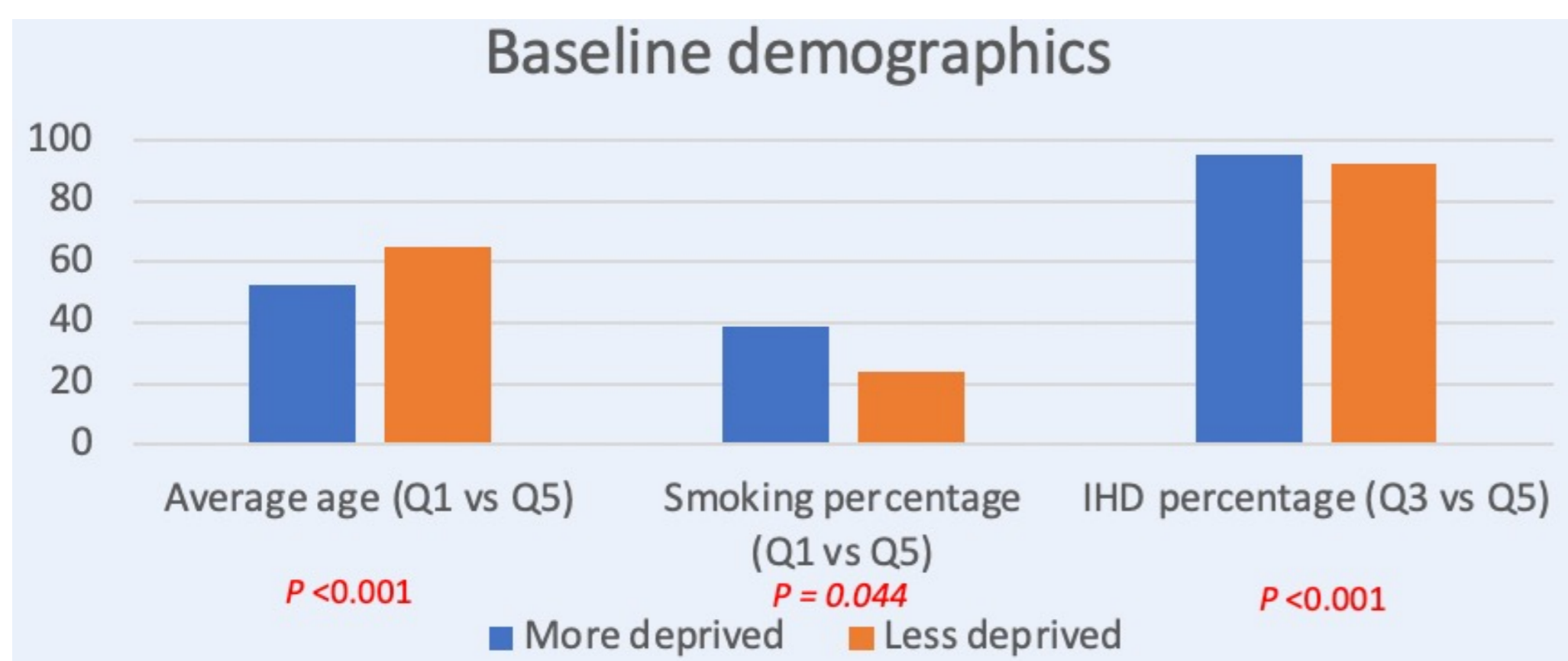


Figure 2: Baseline demographics of patients in each IMD quintile

- Univariate analysis (by quintiles or lower quintiles (IMD 1-3) versus higher quintiles (IMD 4 and above)) showed that deprivation was not significantly associated with ICU admission, as well as worst short and long-term survival outcomes.

## Results

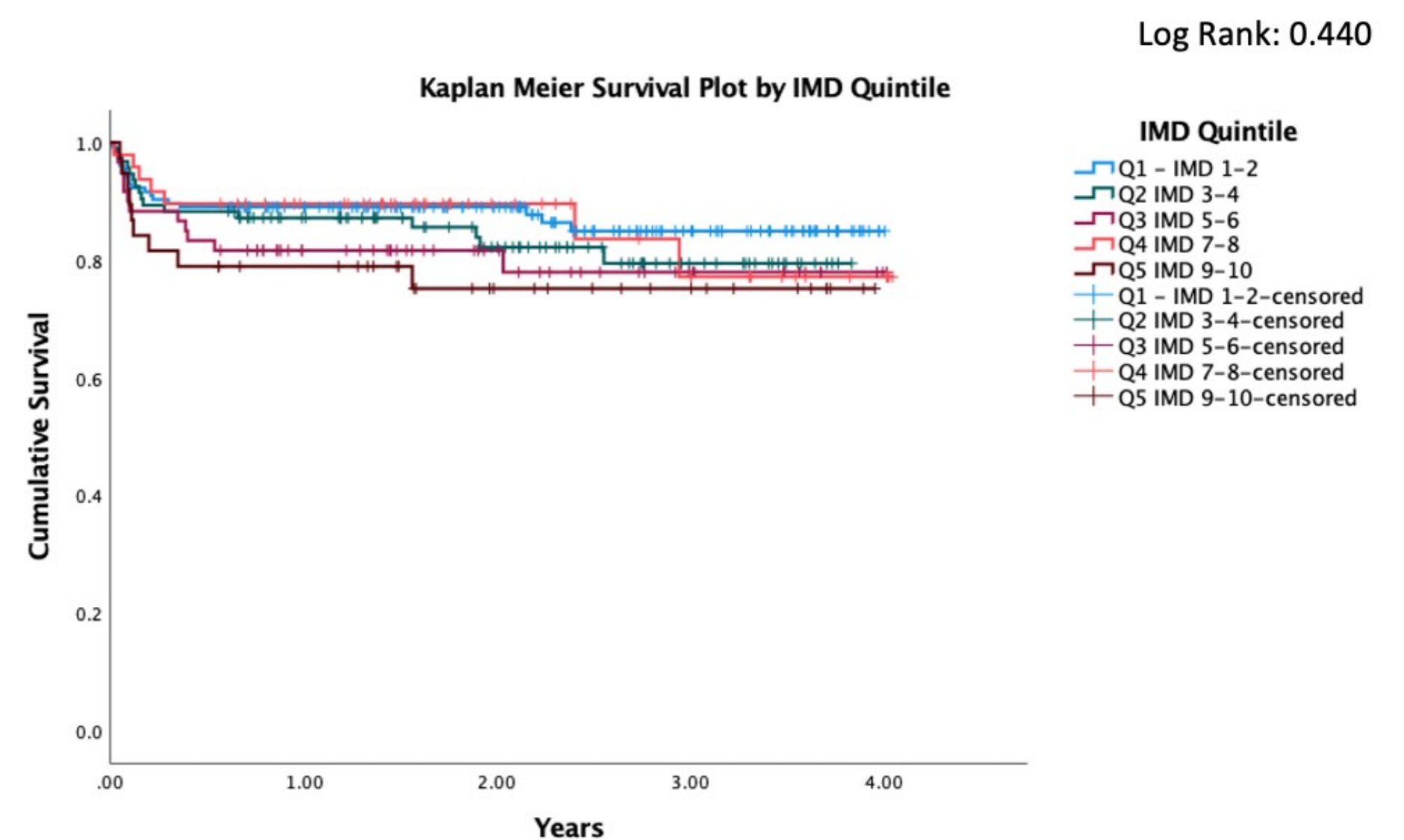


Figure 3: Kaplan-Meier survival curve by IMD quintile

- Multivariate analysis showed significantly poorer survival outcomes for patients with older ages, higher prothrombin time and need for ventilation support in the ICU (**Table 1**)

	P-value	HR	Lower	Upper
IMD Q5	0.964	0.932	0.224	3.850
IMD Q5(1)	0.904	0.917	0.224	3.760
IMD Q5(2)	0.590	0.651	0.137	3.105
IMD Q5(3)	0.604	0.641	0.119	3.441
IMD Q5(4)	0.959	0.956	0.173	5.289
Age	<b>0.003*</b>	1.064	1.021	1.108
Gender	0.087	0.368	0.117	1.158
Type 2 Diabetes	0.714	1.258	0.368	4.299
Past alcohol dependence	0.420	0.622	0.196	1.975
Ischaemic Heart Disease (IHD)	0.118	6.784	0.616	74.688
Hypertension (HTN)	0.855	1.100	0.393	3.078
Smoker (active)	0.870	1.097	0.361	3.333
Prothrombin time	<b>0.050*</b>	0.868	0.753	1.000
Interstitial Oedematous Pancreatitis (IEP)	0.519	0.439	0.036	5.363
Necrotising Pancreatitis (NP)	0.509	0.445	0.040	4.908
Combined splenic and portal vein thrombosis	0.771	1.387	0.153	12.542
Pancreatic necrosis	0.367	1.958	0.454	8.436
Dialysis	0.710	0.803	0.252	2.557
Ventilatory support	<b>0.036*</b>	0.319	0.110	0.927
Endocrine dysfunction	0.825	0.847	0.195	3.679

Table 1: COX regression analysis of factors predicting survival

- Significant predictors for ICU admission included age, higher prothrombin time and need for ventilation support (**Table 2**)

	P-value	HR	Lower	Upper
Age	<b>0.001*</b>	1.054	1.023	1.087
Gender	0.408	0.710	0.315	1.598
Ischaemic Heart Disease (IHD)	0.089	3.765	0.819	17.318
Chronic Obstructive Pulmonary Disease (COPD)	0.366	2.547	0.335	19.347
Alcohol	0.844	1.082	0.493	2.375
Alkaline phosphatase (ALP)	0.103	1.002	1.000	1.004
Platelet count	0.276	0.998	0.995	1.001
Prothrombin time	<b>0.027*</b>	0.888	0.799	0.986
Ventilation	<b>&lt;0.001*</b>	0.198	0.090	0.434

Table 2: Multivariate analysis of factors predicting ICU admission

## Conclusions

- Social deprivation does not appear to have a major impact on short- and long-term outcomes in patients with acute pancreatitis.
- Advancing age and need for ICU admission were more likely to determine survival outcomes in AP.