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A further look into COVID-19 related mortality in patients with diabetes at a District General Hospital

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INTRODUCTION

The COVID-19 pandemic is a global health crisis causing significant morbidity and mortality worldwide. Diabetes, hypertension, cardiovascular disorders, high BMI, male sex and older age were seen to be associated with a high case fatality rate¹.

It is well established that the multiple metabolic and vascular abnormalities of diabetes impair the immune response to pathogens. Uncontrolled glycaemia has previously been associated with increased mortality in patients infected with viruses, including influenza A (H1N1)², SARS-CoV³ and MERS-CoV⁴. Early data demonstrated a sharp rise in COVID-19 related deaths in people with both type 1 and type 2 diabetes⁵. Our hospital was one of the first in London to experience a high number of admissions with COVID-19 patients. We analysed COVID-19 mortality data, focusing on patients with diabetes.

METHODOLOGY

This was a retrospective hospital-based study. Patients with COVID-19 related mortality at Ealing hospital constituted the study sample. Patient information was obtained via electronic patient records. Data was analysed for age, gender, co-morbidities, HbA1C, blood glucose on admission and diabetes medications.

DEMOGRAPHY

Ealing Hospital is a 400 bed hospital under the London North-West University NHS Trust situated in the Borough of Ealing, London. It has an ethnically diverse population of which approximately 25,000 people have diabetes, of which more than 90% have type 2 diabetes. Diabetes is a co-morbidity in 25-30% of inpatient admissions at the hospital.

RESULTS

Our sample size consisted of 93 cases of COVID 19 related deaths.

- There were 43 people with diabetes (Figure 1). All had type 2 diabetes.
- 55.8% of patients had well controlled diabetes with an HbA1c of <58 mmol/mol (Figure 2).
- 60.4% of patients were euglycaemic on admission (Figure 3).
- Only 13.9% of the patients were on insulin.
- Most deaths in people with diabetes occurred in the 70-79 year age group, while in those without diabetes occurred in the 80-89 year age group (Figure 4).
- 53% of cases were of Asian ethnicity and 15% of African-Caribbean background (Figure 5).
- The number of males was higher than females

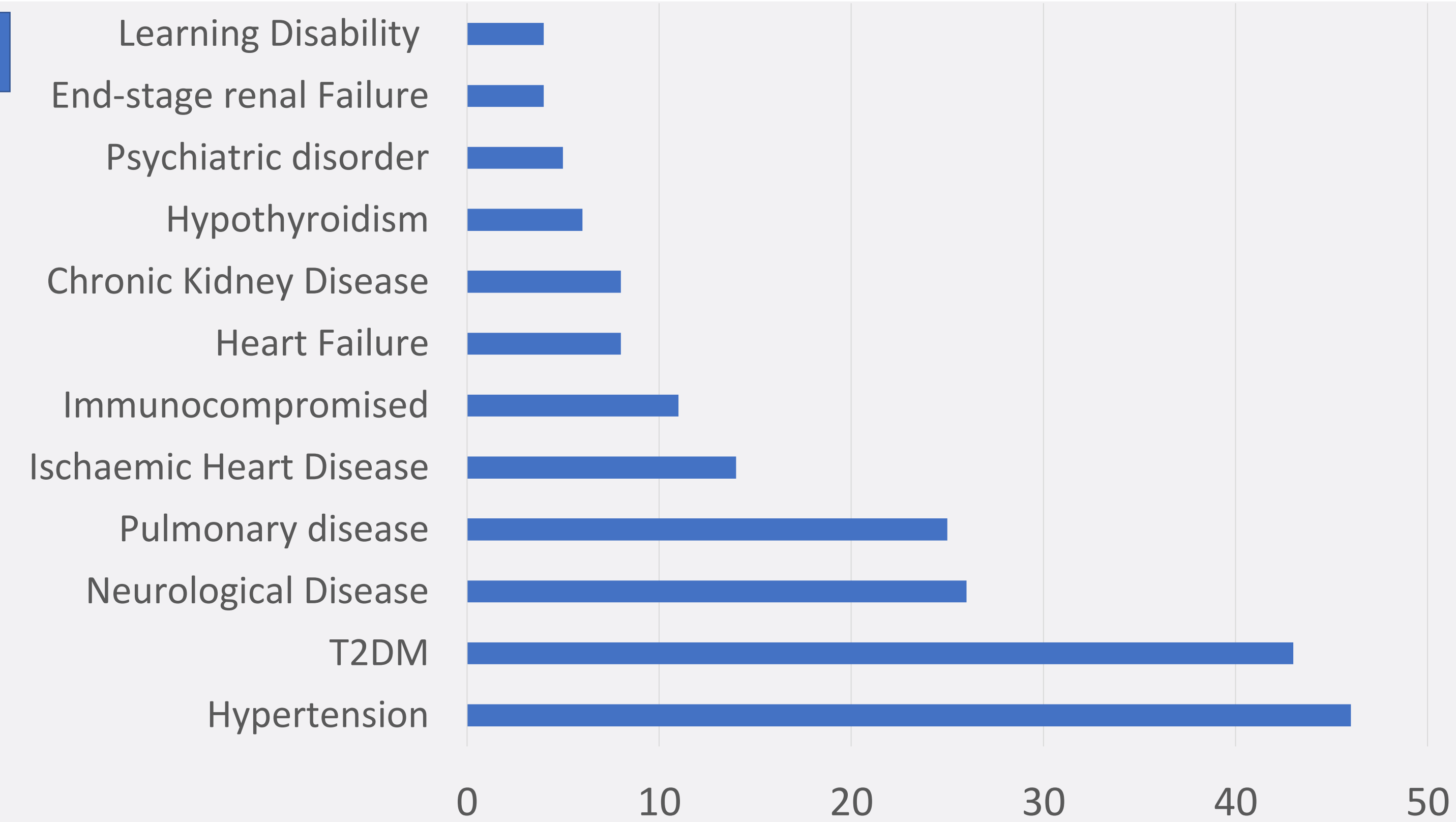


Figure 1: Co-morbidities present in COVID-19 related deaths

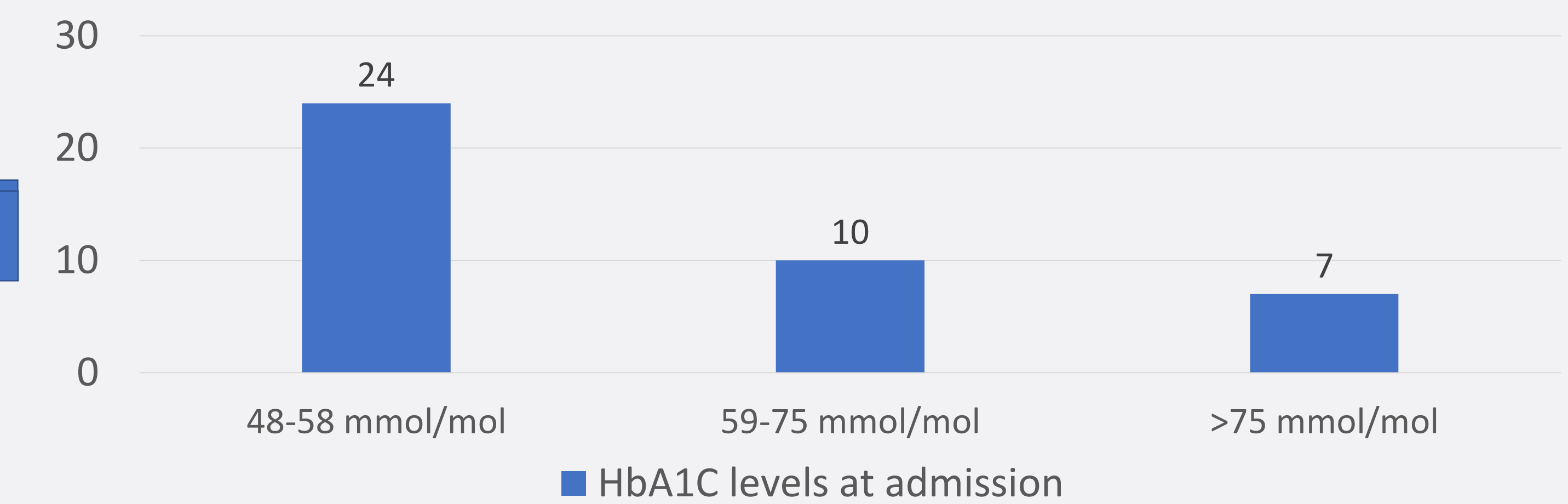


Figure 2: HbA1c of people with diabetes with COVID-19 related deaths

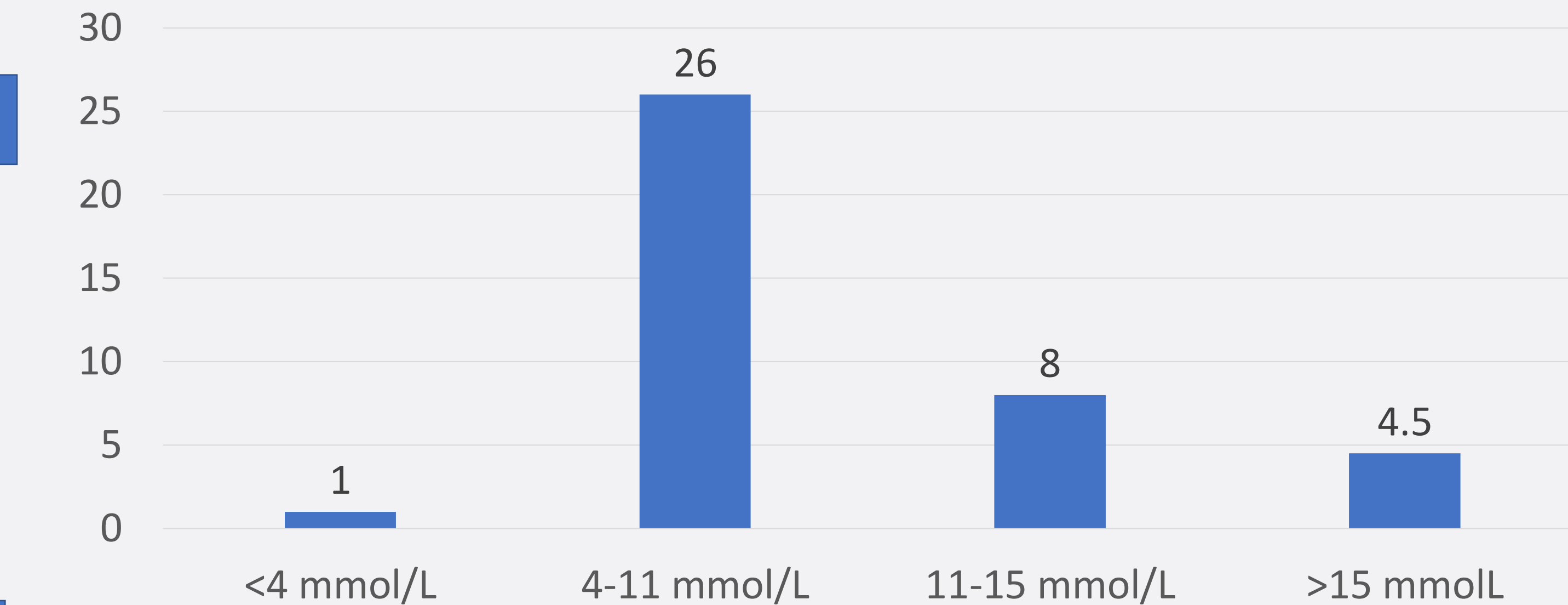


Figure 3: Glucose on admission of people with diabetes with COVID-19 related deaths

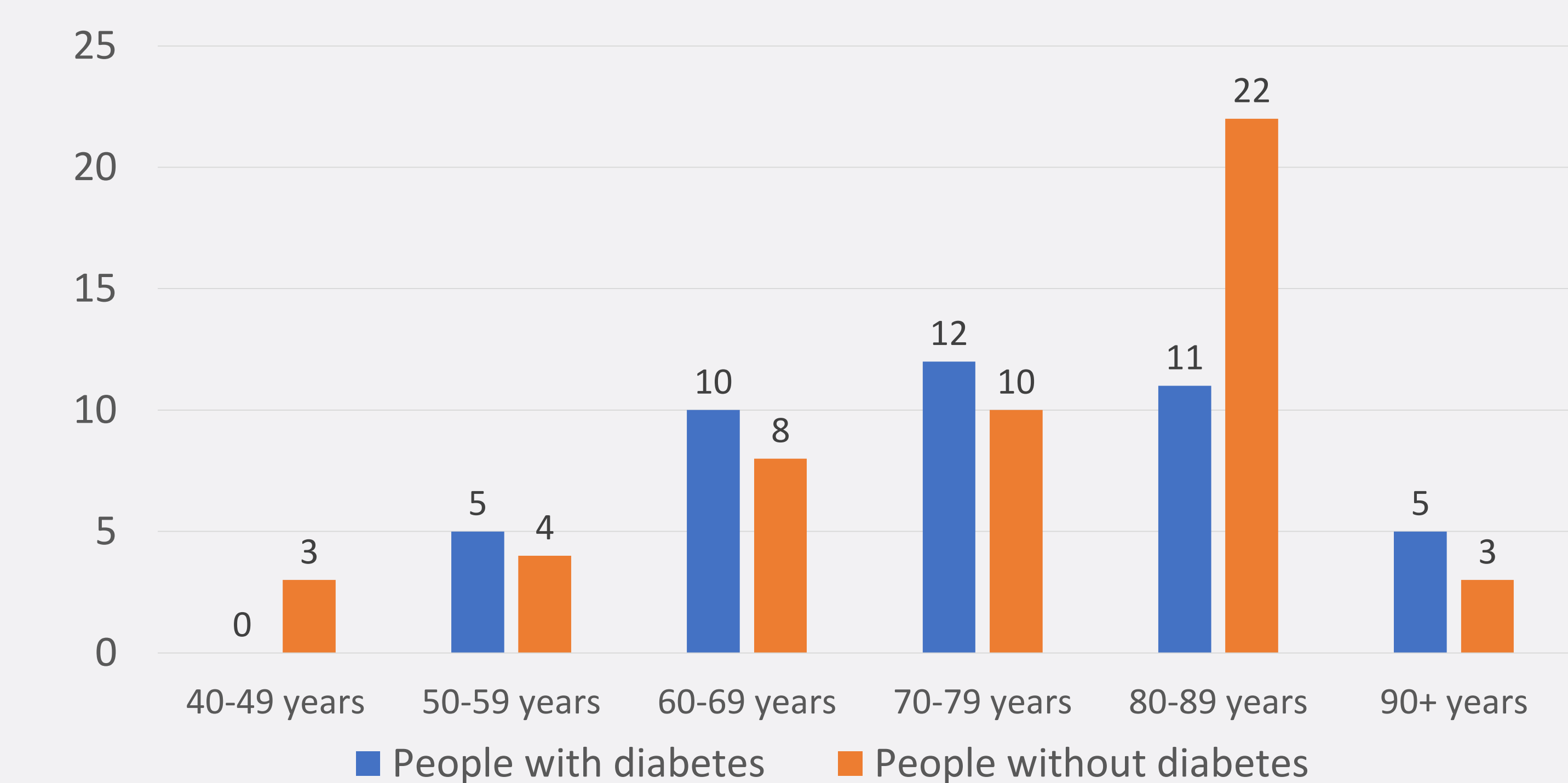


Figure 4: Age comparison between people with diabetes and people without diabetes in COVID-19 related deaths

DISCUSSION

An interesting finding within our sample was that most patients had well controlled diabetes and were euglycaemic at presentation. While diabetes and hyperglycaemia has been associated with increased severity and mortality in COVID 19^{6,7}, emerging data suggests that “new-onset” hyperglycemia has been observed in some COVID-19 patients, with no prior history⁸. Another interesting observation within our sample was the absence of type 1 diabetes. Preliminary data from the UK showed an acute rise in deaths in people with both type 1 and type 2 diabetes during the initial COVID-19 pandemic⁵. However data from Belgium⁹ showed that people with type 1 diabetes had reduced rate of hospitalisation due to COVID-19. .

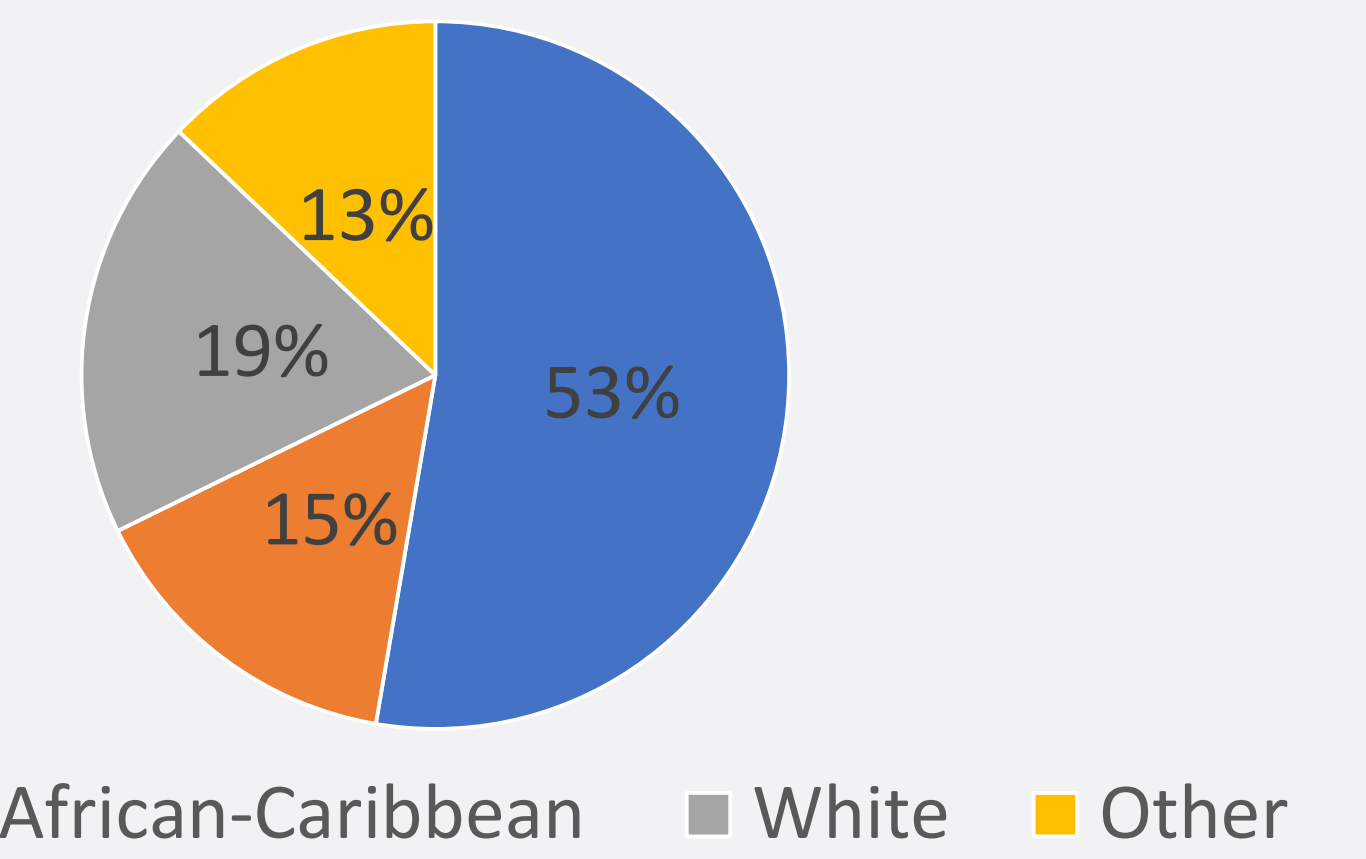


Figure 5: COVID-19 related deaths by ethnicity

It has also been well established that Black, Asian, and minority ethnic (BAME) groups have emerged as a more susceptible group¹⁰. Our mortality data supports this with 68% of our sample belonging to the Asian and African-Caribbean community (Figure 5). Exact reasons for this disparity are unclear though a combination of socioeconomic, as well as the higher prevalence of co-morbidities such as hypertension and type 2 diabetes have been postulated¹¹

LIMITATIONS

1. Small sample size
2. Mortality data limited to initial few weeks of the pandemic when no specific treatment was available, and to one hospital
3. BMI data was not available

CONCLUSION

Diabetes increases the risk of mortality in COVID-19 . BAME population, specially with type 2 diabetes, are at a higher risk of mortality due to COVID-19. This risk seems to be higher even in people with well controlled diabetes

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