Title:
Longitudinal prevalence of inpatient diabetes mellitus in an Australian hospital across five decades: 1972 to 2019

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initial hospital inpatient audits in 1972 and 1983 and we likewise are grateful to current Royal Melbourne Hospital Endocrinologist Dr Catherine Seymour for assisting to conduct the 1996 audit.

Word Counts:

Abstract: 44 words

Main text: 498 words

Key Words:

Diabetes mellitus; prevalence; inpatients

Globally, the prevalence of diabetes mellitus in adults has almost doubled from 4.7% in 1980 to 8.5% in 2014\(^1\), paralleling a tripling of obesity rates\(^2\). The prevalence of diabetes amongst Australian adults is 7.4% \(^3\), however the prevalence of diabetes in people admitted to Australian hospitals is less well-documented given it has relied on hospital coding practices. We describe at least a five-fold increase in the prevalence of diabetes in adult inpatients in a large teaching hospital in Melbourne over a five-decade period.

Seven inpatient point-prevalence surveys were conducted at the Royal Melbourne Hospital from 1972 until 2019 (years 1972, 1983, 1996, 2000, 2008, 2012, 2019). The surveys consisted of cross-sectional ward-based audits of bedside records for all inpatients performed over one day to assess
the diabetes status of every individual admitted to hospital, excluding elective day admissions. Survey years were determined by practical considerations related to availability of staff and resources. Diagnosis of diabetes was based on documentation of a pre-existing clinical diagnosis according to contemporaneous World Health Organisation biochemical criteria1.

The proportion of inpatients with diabetes from 1972 to 2012 increased five-fold (Figure 1): 1972 4.5% (25/551), 1983 10% (41/394), 1996 15% (68/447), 2000 24% (82/347), 2008 27% (66/243), and 2012 30% (93/310), p<0.001. In the most recent point-prevalence survey conducted May 2019, 26% of inpatients (93/359) had diabetes (57 male, 36 female, median age 64, 86 with type 2 diabetes), similar to other Melbourne metropolitan hospitals4. Prevalence was higher in medical compared to surgical patients, 33% (71/212) vs 15% (22/147), p<0.001, and in patients who primarily spoke a language other than English compared to English speakers, 39% (20/51) vs 24% (73/308), p=0.019.

Total number of inpatients varied between surveys due to variations in hospital bed capacity and unforeseen circumstances on survey days including patients leaving wards for investigations/procedures, discharges, and clinical notes being unavailable.

In summary, we describe at least a five-fold increase in diabetes prevalence from 4.5% in 1972 to 26% in 2019 in a large Australian teaching hospital, demonstrating people admitted to hospital have a much higher likelihood of having diabetes. The point-prevalence measured at each survey may be an under-estimate, possibly more so in earlier rather than recent years with increasing awareness and screening. The greater prevalence of diabetes in people from non-English speaking backgrounds could reflect increased genetic risk and/or suboptimal management of diabetes and related comorbidities. The high proportion of people admitted to hospital with diabetes remains a significant concern given its association with healthcare-associated infection, mortality and length of stay. It is possible the prevalence of diabetes in people admitted to hospital is plateauing however the makeup of inpatients at the Royal Melbourne Hospital has changed over the years with its transition to a major quaternary referral centre and level 1 trauma centre. There is a need to
systematically capture the prevalence of diabetes in people admitted to Australian hospitals to aid health professionals, hospital executives and government to plan for enhanced acute services to promote better diabetes care.

References:


**Figure legends:**

**Figure 1:** Diabetes prevalence in hospital inpatients from 1972 to 2019. P<0.001 (Chi-Square test)
Abstract:

Diabetes mellitus is an increasingly prevalent condition in people admitted to hospital. Serial point-prevalence surveys conducted at a Melbourne teaching hospital from 1972 to 2019 demonstrate at least a five-fold increase in the prevalence of diabetes in adult inpatients over a five-decade period.
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