

Decreasing Admissions but Increasing Readmissions for Mental Health in-Patient Treatment in Scotland, UK

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Abstract. We have analysed mental health data for in-patient admissions from 1997 to 2021 in Scotland. The number of patient admissions for mental health patients is declining despite population numbers increasing. This is driven by the adult population; child and adolescent numbers are consistent. We find that mental health in-patients are more likely to be from deprived areas: 33 % of patients are from the most deprived areas, compared to only 11 % from the least deprived. The average length of stay for a mental health in-patient is decreasing, with a rise in stays lasting less than a day. The number of mental health patients who have been readmitted within a month fell from 1997 to 2011, then increased to 2021. Despite the average stay length decreasing, the number of overall readmissions is increasing, suggesting patients are having more, shorter stays.

Keywords. Mental Health, Data Analysis, Deprivation Inequality, Admissions Data

1. Introduction

Mental illness is one of the major public health priorities in Scotland, the UK and worldwide. Each year, 1 in 4 people in Scotland are estimated to be affected by mental health problems [1, 2]. Healthcare services are increasingly oversubscribed, and COVID-19 has deepened the healthcare gap; the pandemic greatly increased mental health waiting times for adults across Scotland, UK [3].

Waiting times for a first appointment are only part of the overall mental health services picture. Once a patient is registered in the system, how they are treated and if they receive in-patient treatment is also important in understanding mental health care and where improvements can be made. Recently, hospital admission rates for ill mental health have been found to be increasing in England and Wales, particularly among older adults [4]. In Scotland, the number of available beds for mental healthcare has decreased since 2014 [5]. There are also indications that socioeconomic deprivation may be linked to the rate and cause of death of patients with ill mental health [6].

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In this study, we analyse data on patient admissions for mental health in Scotland using open access mental health services data provided by Public Health Scotland (PHS) [7], Scotland’s agency for health and wellbeing.

2. Methods

We used national registers of mental health in-patient data collected by PHS from each administrative area (called health boards) in Scotland [7]. The datasets contained patient admission and discharge numbers for each month from 1997 to 2021, categorised by age, sex, deprivation index, length of hospital stay, diagnosis, readmissions for each health board and for Scotland as a whole.

Diagnoses were coded using the ICD-10 coding system [8], using F00–F99 to classify mental health conditions. To classify deprivation, we use quintiles of a multiple deprivation index which looks at the extent to which an area is deprived across seven domains: income, employment, education, health, access to services, crime, and housing [9]. We use descriptive statistical and visualisation methods to search for trends in the data categorised by different demographics to search for differences in in-patient care.

3. Results

Since 1997, the population of Scotland has grown from ~5.1 million to ~5.4 million in 2019 [10]. Between 2014 and 2021, mental health treatment referrals have increased from ~2,000 to ~14,000 per month [11]. Despite these increases, Figure 1 shows that the number of mental health patients being treated as in-patients in Scotland is declining. This is coupled with an increase in referrals and waiting times for all mental health services [3, 12], indicating an increase in demand coinciding with decreasing capacity.

Figure 1 shows the decline in patient admissions is driven by adults; child and adolescent numbers are lower but remain a steady proportion of the population.

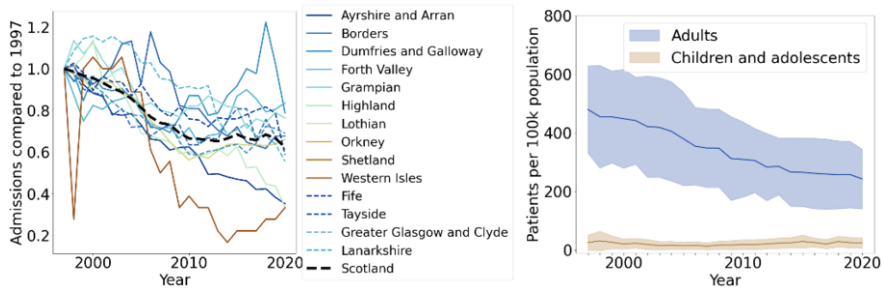


Figure 1: Number of mental health patient admissions over time. Left: overall fractional changes since 1997 for all health boards in Scotland. Right: Number of mental health patients per 100k of the population over time for adult and children and adolescent patients. Solid lines show the mean across all Scottish health boards. Shaded bands show ± 1 standard deviation spread between health boards.

3.1. Deprivation index

In-patients are more likely to be in deprived areas indicating inequality across Scotland. Figure 2 shows that 32.8 % of in-patients were in the lowest quintile (most deprived

areas) in 2020/21 compared to only 11.0 % in the highest quintile (least deprived). These distributions have remained constant over the 23-year period examined here, indicating there is a need for measures to address this long-standing challenge.

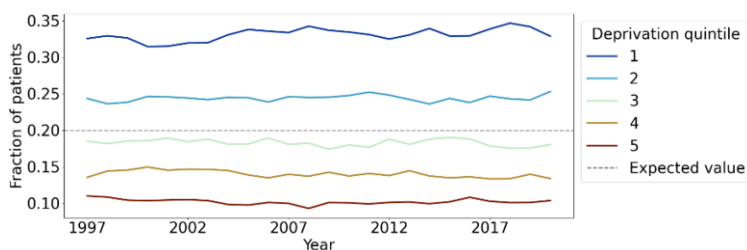


Figure 2: Proportion of mental health patients per deprivation quintile over time. Patients are more likely to be in the first (most deprived) or second quintile relative to the expected proportion and less likely to be in the third, fourth or fifth (least deprived) quintiles. The expected value assumes a uniform distribution across quintiles (e.g., no inequality). All trends are steady over time.

3.2. Length of hospital stay and readmissions

Figure 3 shows the percentage of admissions which were readmissions in the short-term (within 28 days of discharge from initial admission) and in the longer-term (within 133 days of discharge). Short-term readmission percentages fell to 2011 and have since risen above the 1997 numbers. Long-term readmissions also fell to 2011 and have levelled off since. The number of mental health in-patients is decreasing (Figure 1), and the average in-patient stay length is also decreasing. This is driven by an increase in stays of less than one day: the proportion of stays of less than one day increased from 1.8–2.5 % between 1997/98 and 2012/13 to 4.9 % in 2020/21. There remains a steady fraction of stays of longer than one month: 34.6 % in 1997/98 and 34.9 % in 2020/21. The increase in short in-patient stays (< 1 day) may affect the number of readmissions to hospital (although see [13]).

The overall percentage of readmissions (the difference between patient numbers and discharge numbers) within a year has gone from 50 % in 1997/98 to ~40 % in 2007–2013 to over 60 % in 2020/21. So, although the average in-patient stay length is decreasing, the number of overall readmissions is increasing, suggesting patients are having more, shorter stays.

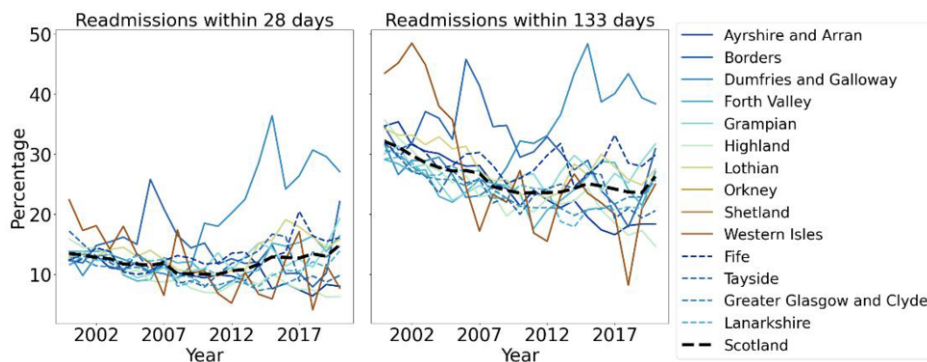


Figure 3: Percentage of stays that were readmissions over time for all health boards in Scotland. Left: short-term readmissions (within 28 days). Right: longer-term readmissions (within 133 days).

4. Conclusions

In summary, data from 1997 to 2021 for patient admissions due to ill mental health in Scotland show five key points. Firstly, the number of patient admissions for mental health patients is declining. This is despite an increase in referrals and waiting times for mental health services [3]. Secondly, in-patient numbers for children and adolescents are steady; the fall in hospitalisations is driven by adult patients. Thirdly, patients from more deprived areas are more likely to be hospitalised due to ill mental health than people in less deprived backgrounds. This trend is stable for the duration of the study. Fourthly, the average in-patient stay length is decreasing: the proportion of stays < 1 day is increasing, but there is a consistent fraction of stays > 1 month. Finally, short-term readmission numbers fell from 1997 to 2011, then increased to 2021. Long-term readmission numbers also fell to 2011, then leveled off between 2011 and 2021. Although the average stay length is decreasing, the number of overall readmissions is increasing, suggesting patients are having more, shorter stays.

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