Mapping mental health service access: achieving equity through quality improvement

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ABSTRACT

Background Improving access to psychological therapies (IAPTs) services deliver evidence-based care to people with depression and anxiety. A quality improvement (QI) initiative was undertaken by an IAPT service to improve referrals providing an opportunity to evaluate equitable access.

Methods QI methodologies were used by the clinical team to improve referrals to the service. The collection of geo-coded data allowed referrals to be mapped to small geographical areas according to deprivation.

Results A total of 6078 patients were referred to the IAPT service during the period of analysis and mapped to 120 unique lower super output areas (LSOAs). The average weekly referral rate rose from 17 during the baseline phase to 43 during the QI implementation phase. Spatial analysis demonstrated all 15 of the high deprivation/low referral LSOAs were converted to high deprivation/high or medium referral LSOAs following the QI initiative.

Conclusion This work highlights the importance of QI in developing clinical services aligned to the needs of the population through the analysis of routine data matched to health needs. Mapping can be utilized to communicate complex information to inform the planning and organization of clinical service delivery and evaluate the progress and sustainability of QI initiatives.

Keywords geographical heterogeneity, inequity, quality improvement, mental health, public health

Introduction

Mental health, together with physical and social health, is a key determinant of a person's overall wellbeing.[1] The prevalence of common mental disorders (CMDs), which include anxiety disorders and depression, in the general adult population of working age in England is estimated to be 16.2%, with mixed anxiety and depressive disorder accounting for half of these.[2] The World Health Organization rates depression as the leading global cause of disability.[3] There are effective treatments for CMDs and in 2007 the UK government announced a large-scale health initiative for improving access to psychological therapies (IAPTs) to treat depression and anxiety. IAPT is based on evidence-based recommendations from the National Institute of Health and Clinical Excellence and is currently provided within the National Health Service (NHS) and aims to provide greater access to psychological (talking) therapies throughout England to those who could benefit from them.[4]

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As with many other health problems, CMDs display social gradients within the population, representing health inequality.[5] This is exacerbated by inequitable access to appropriate treatment.[6] Equitable access to services provided by the NHS should ensure that a 'person's access and subsequent use of services is based on their health status or need' and has been a guiding principle of the NHS since its inception >60 years ago.[7] The new commissioning landscape aims to ensure that services are provided on the basis of need rather than past or current patterns of utilization. Using deprivation, specifically the index of multiple deprivation (IMD), as a marker of need linked to service use can provide a key resource in demonstrating equity of access to a service and, coupled with the emerging field of quality improvement, provides an opportunity for individual services to assess equity of access and identify geographical areas or populations that may be currently underserved.[8]

The Westminster IAPT Primary Care Psychology Service undertook a quality improvement initiative between April 2010 and May 2011. The initiative was designed to improve referrals to the service from across the catchment area served, namely the London Borough of Westminster.

The aim of this paper is to investigate whether the quality improvement initiative, as an intervention, improved access to the service from areas of high need, thus ensuring equitable access to the Westminster IAPT service. This paper does not set out to elucidate the effectiveness of individual interventions within the quality improvement initiative.

Methods

Study design

The London Borough of Westminster is located in central London with a resident population of 253 000 (although the daytime population can reach 1 million people due to the influx of workers and visitors). The population of Westminster has grown by over 24% in the last 10 years and is expected to continue to grow due to migration and natural growth. The residents of Westminster span a spectrum from some of the wealthiest to some of the most deprived in the UK.[9]

The Westminster IAPT Primary Care Psychology Service worked in partnership with the National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care (CLAHRC) for Northwest London to increase referrals to their service between April 2010 and September 2011. NIHR CLAHRC for Northwest London assists clinical teams in the application of a comprehensive package of tools to support the sustainable implementation of evidence-based interventions. The use of quality improvement tools facilitated a staged approach to implementing a self-referral route followed by various social marketing interventions, including leaflets and posters, local media and direct contact with community groups, churches and public and third sector organizations across the borough. The aim of the activities was to increase all referrals to the service but especially from 'harder-to-reach groups' including older adults, black and ethnic minorities groups and those from deprived areas.

Data sources

The Westminster IAPT Primary Care Psychology Service collects routine demographic and clinical data from all patients referred to the service, as per the minimum data set schedule.[10] Data are collected using IAPTus (Mayden, Wiltshire, UK), a clinical data system, which allows the real time analysis of clinical data to monitor the effectiveness of the implementation of both clinical and service interventions.

Anonymized geocoded referral data were extracted from the IAPTus clinical database. The data were aggregated to show the weekly number of referrals to the service of residents of Westminster by postcode for the period of analysis, between February 2009 and May 2012.

Mapping referrals

Data were aggregated into 'baseline', 'implementation' or 'sustainability' phases using the dates of the start and end of the quality improvement initiative. The baseline phase ran from Week 1 through Week 58 (58 weeks); the implementation phase from Week 59 to Week 135 (77 weeks) and the sustainability phase ran from Week 136 to 170 (35 weeks). The postcode for each patient residing in Westminster and referred during either the baseline, implementation or sustainability phase were converted to the appropriate lower super output area (LSOA) using GeoConvert (http://geoconvert.mimas.ac.uk/), an online tool that allows users to convert and match different levels of geographic areas in England and Wales. This analysis provided the number of referrals for each of LSOA, which was subsequently divided by the number of weeks covered during that period to standardize the referral rates, e.g. 122 referrals in an LSOA during the implementation phase of 77 weeks would result in a referral rate of 1.58 referrals per week.

In order to visualize the referral data the referral rates for each LSOA at each phase were categorized as either a high, medium or low referral area. The quintiles were derived from generating quintiles for the complete data set. The first quintile was set as the upper limit for 'low' referrals, the second, third and fourth quintiles were used to indicate 'medium' referrals and the 5th quintile used as the lower limit of 'high' referrals.

Visualizing the change in the number of referrals geographically provides an evaluation of the impact of the intervention in increasing referrals across different LSOAs in the borough. The significant relationship between CMDs and deprivation provides a framework to describe a model for assessing need and service utilization.

The weighting of referrals according to deprivation allows direct comparison of service utilization and a proxy measure of need, especially allowing the identification of areas of high deprivation (indicating high levels of need) and low service utilization (indicated by low referrals), demonstrating that Tudor Hart's inverse care law is in operation.[11]

Additionally, identifying areas of high deprivation (high need) with high levels of referrals identifies postcode sectors where service utilization is more closely matched with need.

The most recent IMD scores (2010) were analysed for the 120 Westminster LSOAs to calculate the quintiles of deprivation and used to assign the following categories: low deprivation, quintile 1; medium deprivation, quintiles 2–4; high deprivation, quintile 5, similar to the analysis and categorization of referrals. A map of Westminster demonstrating the geographical difference between IMD score quintiles and the low, medium and high classification was generated using Quantum GIS (QGIS) (Fig. 1).
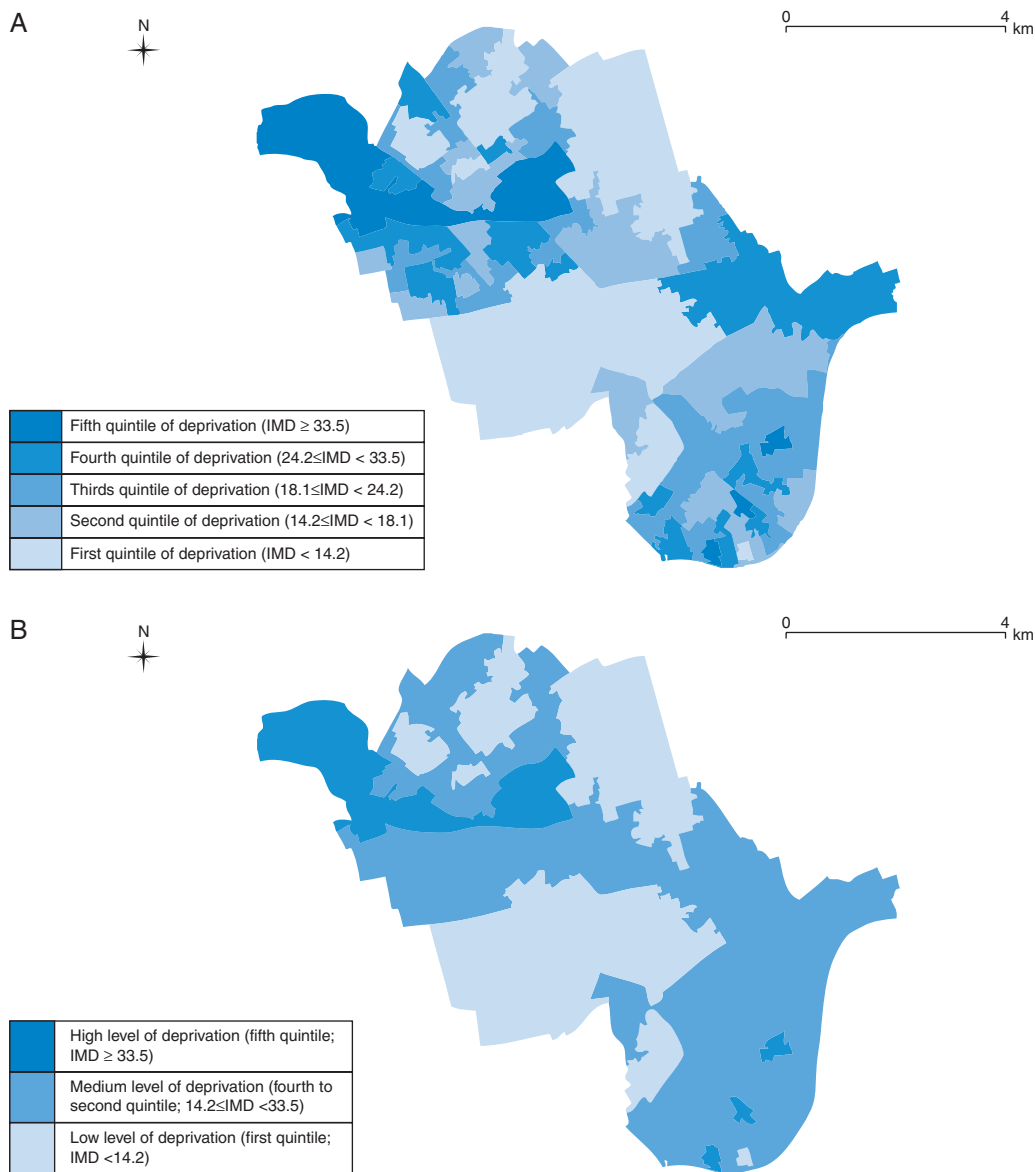

Fig. 1 Conversion of IMD 2010 quintiles to low, medium and high categories at the LSOA level for the London Borough of Westminster. (**A**) IMD quintiles mapped to LSOA. (**B**) IMD categories mapped at LSOA, where low deprivation refers to quintile 1 (IMD <14.21); medium deprivation to quintiles 2–4 (14.21 ≤IMD ≤33.54); high deprivation to quintile 5 (IMD >33.54).

Table 1 Cross-tabulated IMD and weekly referral rates to generate a composite index of unmet need. IMD categories were generated as low, medium and high deprivation (as a proxy measure of need) and cross-tabulated with similar categories for levels of referral. Referral numbers for this period were split into quintiles where low: <0.114 referrals per week; medium: 0.114–0.486 referrals per week; high: >0.486 referrals. The colour key generated from the combined categories is subsequently used as a legend for the mapping

The cross-tabulation of the quintiles of deprivation seen in Westminster with the levels of referrals to the IAPT service provided an opportunity to identify individual LSOAs where there was a disparity between the estimate of need and service uptake. The analysis involved cross-tabulation between IMD and referrals using the categories of deprivation and referrals (Table 1). The levels of referrals are based on the range of total number of referrals for both the baseline phase and implementation phase to allow a direct comparison between them.

Maps were generated to display the number of referrals for each LSOA sector in Westminster for the baseline, implementation and sustainability phases using QGIS (QGIS; Geospatial Foundation, Vancouver).[12]

Results

Quality improvement

The quality improvement project based at the Westminster IAPT service implemented a self-referral route within their service, followed by a range of social marketing interventions delivered across a range of community settings with the aim of increasing referrals. During the period of analysis, February 2009 to May 2012, 6078 patients residing in Westminster were referred to the IAPT service. During the baseline phase, Weeks 1–58 (February 2009 to March 2010), before the initiation of the QI initiative, 992 referrals were made with a mean average referral of 17 patients per

week; the implementation phase, Weeks 59–135 (April 2010 and September 2011), saw 3295 patients referred with an average referral of 43 patients per week; finally the sustainability phase, Weeks 136–170 (October 2011 and May 2012) saw a total of 1791 patients referred with an average weekly referral of 51 patients per week (Supplementary Figure 1). Throughout the period of analysis patients were referred from 2539 unique postcodes within 120 unique LSOAs in the borough.

Mapping referrals

The baseline, implementation and sustainability phases, classified according to the dates of the QI initiative, provided both a temporal and geographical comparative data set to assess the impact of the QI initiative. The analysis indicated that 15 of the 120 LSOAs in Westminster were categorized as high deprivation/low referral LSOAs (HL) identified as areas of high unmet need (Fig. 2). Subsequent spatial analysis demonstrated that all 15 of the high deprivation/low referral LSOAs were converted to high deprivation/high or medium referral LSOAs (HH/HM), where high has been met at least to some extent following the quality improvement initiative (Fig. 3). Importantly, all 15 of these LSOAs maintained their improved referrals during the follow-up period, suggesting a sustainable change within these areas of high need (Fig. 4). Additionally, there were no areas of high deprivation/high referral (HH) during the baseline phase but 7 were generated during the implementation phase and even more impressively there were 12 in the sustainability phase, indicating improved access in areas of need.

Discussion

Main findings of this study

This study demonstrates the potential for using routine data collected from the IAPT service to assess the impact of quality improvement initiatives on small population geographies. The activities and interventions undertaken as part of the quality improvement initiative, including the introduction of the self-referral route followed by numerous social marketing interventions, has been shown to increase referrals generally across the borough. More specifically, the improved referrals have been demonstrated at a local population level where high levels of need were potentially not being met previously. Crucially, this work also demonstrates the sustainability of such a programme to improve referrals longer term. In addition to the evaluative role of the mapping it has also demonstrated that whilst the quality improvement initiative has delivered better access in some of the most deprived areas of
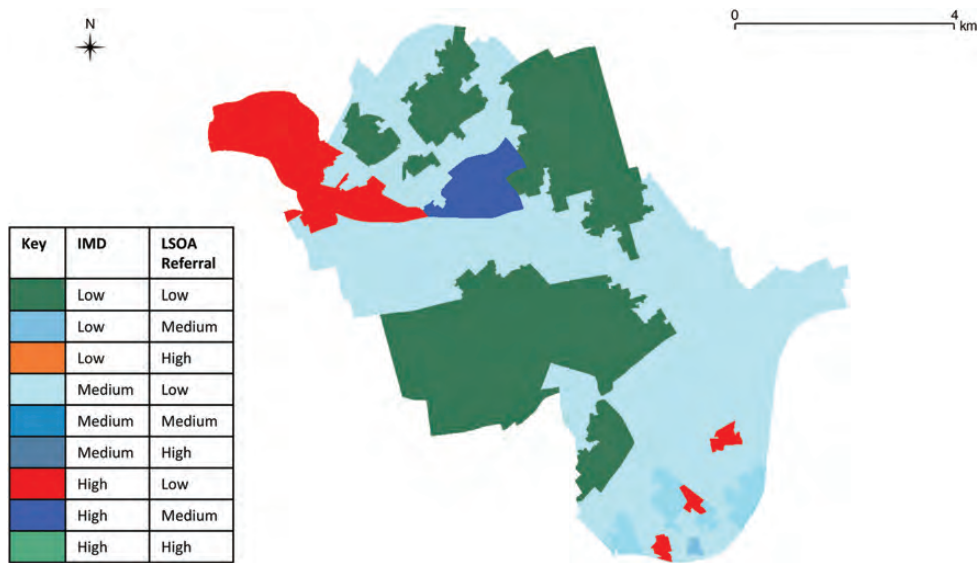
Fig. 2 Mapping of the composite measure of unmet need across the London Borough of Westminster by LSOA during the baseline phase (Weeks 1–58). The mapping indicates there are 15 LSOAs with potentially high levels of unmet need (HL) mostly in the northwest of the borough but also patches in the south.
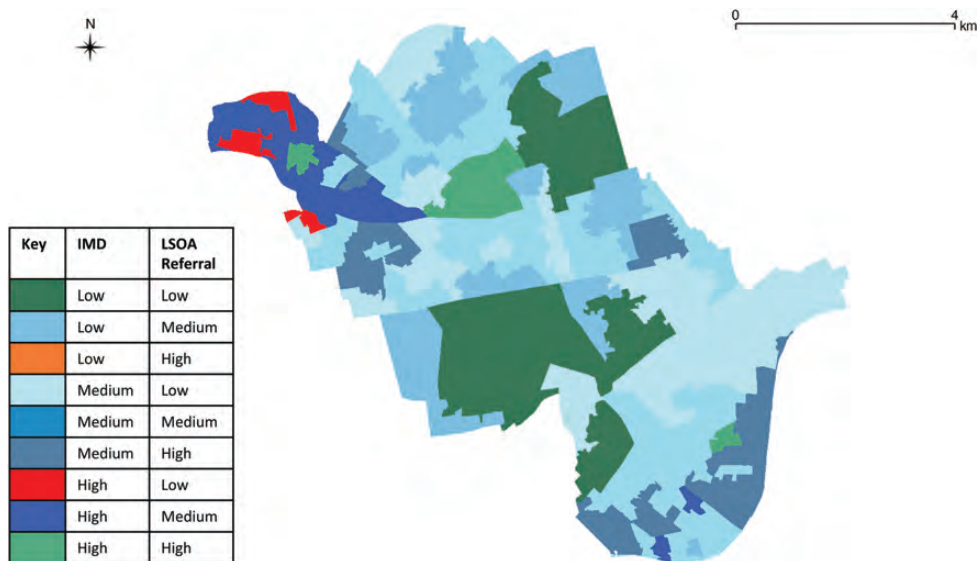

Fig. 3 Mapping of the composite measure of unmet need across the London Borough of Westminster by LSOA during the implementation phase (Weeks 59–135). The mapping demonstrates that of the 15 LSOAs shown previously to have potentially high levels of unmet need (HL) all have been converted to HM/HH categories indicating enhanced referral rates and thus potentially better meeting the needs of the population.

the borough, there is still room for improvement and identifies new 'target areas/populations' for work.

What is already known on this topic

Mental health disorders and access to mental health services display social gradients within the population, often manifesting as examples of health inequalities attributed in part to social deprivation. This has been demonstrated with both serious mental illness and CMD.[13–15] Initiatives such as the IAPT programme have been implemented in an attempt to reduce these differences and provide greater access to evidence-based therapies for those with higher levels of need.
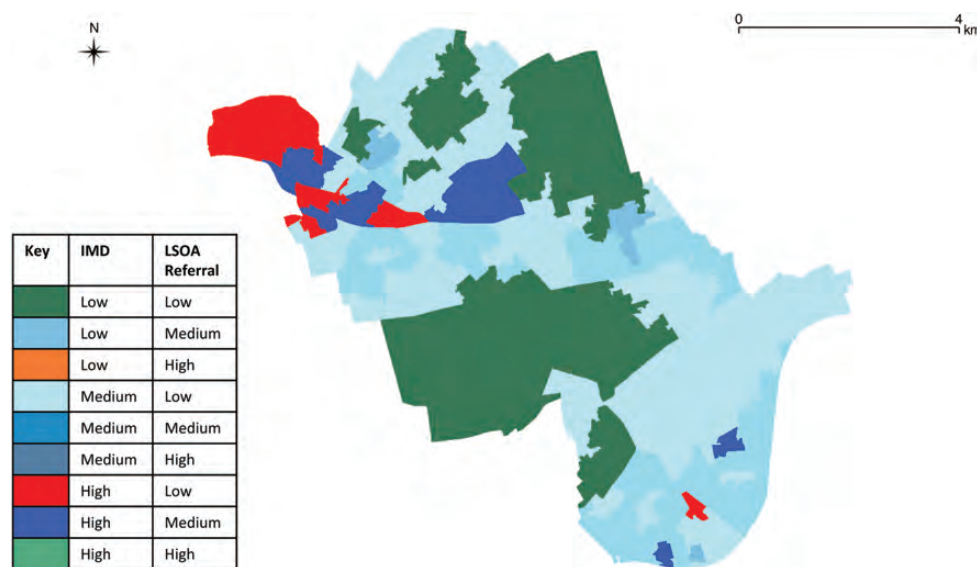
Fig. 4 Mapping of the composite measure of unmet need across the London Borough of Westminster by LSOA during the sustainability phase (Weeks 136–170). The mapping visualizes the alteration of patterns of referral, and whilst there is a legacy effect of all the original HL LSOAs being maintained as HH/HM; there are some LSOAs with a potential over provision of service (LH).

What this study adds

Quality improvement methods can be employed to enhance clinical services to deliver better targeted and more effective care to patients. A population health perspective within quality improvement initiatives provides an opportunity to ensure that services are delivered to those who need them most and thereby contribute to a potential and measurable reduction in health inequalities. This analysis demonstrates that the quality improvement initiative in the Westminster IAPT service has delivered better access to some of the most deprived areas in the borough and that there are opportunities for further improvement. The comparison of quality measures across populations is not new and has been established in other settings but we propose a new and innovative way of combining population level metrics of need with quality improvement methodologies designed to enhance service delivery.[16]

Limitations of this study

This study does not aim to describe and evaluate the specific interventions undertaken as part of the quality improvement initiative and merely acts to expound the capacity for examining such initiatives at a population level to evaluate programmes and more importantly to provide a strategic overview for a future where resources are limited and need to be targeted where most appropriate or needed. This study was not able to consider important variables within the data analysis looking at the role of ethnicity, gender or other demographic factors in increasing referrals, although some of these demographic characteristics are accounted for within the composite measure of IMD.

Conclusions

There are an estimated 1.24 million people in England living with a diagnosis of depression and 2.28 million with an anxiety disorder, both of which account for a significant proportion of general practitioners' daily workloads. In 2007 it was estimated that CMDs cost £2.9 billion per year, projected to reach £5 billion by 2026, even excluding the large cost of lost employment.[17] This clearly puts the issue of CMD into perspective in terms of both the financial costs and the burden on the population. The provision of services meeting the geographical heterogeneous distribution of CMD requires a population-based approach to commissioning.[18] Directing resources through the provision of services for patients with the greatest need aims to rectify the paradoxical 'inverse care law'.[11,19] Further challenges around defining populations served, identifying opportunities for new ways of delivering services and cost-effective and affordable interventions are still evident. We offer an approach to ensure there is equitable access to services and interventions but further work is required to demonstrate that equitable access results in equitable outcomes.

Supplementary data

Supplementary data are available at the *Journal of Public Health* online.

Authors' contribution

J.G. led the quality improvement work; S.G. and R.B. conceived the study; J.M., A.P., E.H. and S.G. performed the analyses; A.P., E.S. and R.B. provided guidance in their respective areas of expertise; S.G. and J.M. wrote the first draft; all authors contributed to the revision of the manuscript.

Ethical approval

Ethics approval was not required for this work as it is part of a service evaluation and improvement project.

Conflict of interest

This article presents independent research commissioned by the National Institute for Health Research (NIHR) under the Collaborations for Leadership in Applied Health Research and Care (CLAHRC) programme for North West London. The views expressed in this publication are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health.

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