Bradford Inequalities Research Unit

Findings of the effectiveness evaluation of the Bradford Central Locality Integrated Care Services (CLICS) intervention (which integrates social prescribing and general practice)

Summary report for the Reducing Inequalities in Communities (RIC) programme

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Executive Summary

Project overview

The Central Locality Integrated Care Services (CLICS) is an intervention that integrates social prescribing and general practice. The intervention is commissioned by Bradford City CCG (now Bradford District and Craven Health and Care Partnership) as part of the Reducing Inequalities in Communities (RIC) programme, from October 2020 to March 2024.

CLICS is being delivered in central Bradford where there are large health inequalities. By integrating clinical and non-clinical services to help provide personalised care for individuals it aims to reduce unplanned hospital admissions.

CLICS is based on the Frome model which reported a reduction in unplanned hospital admissions of 14% over a period of 44 months (3 years 8 months)[1].

Evaluation overview

This report shares the findings of an effectiveness evaluation which looked at the impact of CLICS on unplanned hospital admissions 12 months after discharge from the service.

A *Difference in Differences* approach was used to compare changes in the intervention and matched control groups from before to after the CLICS intervention.

The evaluation utilised Connected Bradford data to identify patients who had received CLICS (n= 917) and create a matched control group (n= 3,668) based on age, gender, ethnicity and comorbid health conditions.

Changes in health-related quality of life (EQ-5D) and wellbeing (Short Warwick–Edinburgh Mental Wellbeing Scale, SWEMWBS) were collected from CLICS patients at the start and the end of their involvement with the intervention. These measures were only collected for CLICS patients with no similar data available for the matched control group.

Findings

The CLICS intervention engaged with an ethnically diverse and deprived population: The average age was 59.8 years, 63% were female, and the main ethnic groups were Pakistani heritage (44%) and White British (27%). The majority of patients (72%) lived in the lowest quintile of deprivation. The CLICS intervention and matched control groups were closely aligned on each of these key criteria, however, the rates of unplanned hospital admissions were higher in the control group.

Executive Summary

Findings

17%

In the effectiveness evaluation the odds of an unplanned hospital admission was 17% lower in the CLICS group compared to the matched control group (Odds Ratio = 0.83; 95% Confidence Intervals: 0.62-1.12). However, the confidence interval was wide (showing large variation) meaning that we cannot be certain that this finding is accurate.

A sub-analyses looking at the impact on ethnicity found that the odds of an unplanned hospital admission in White British patients was 49% lower in the CLICS group compared to the matched control group (OR= 0.51; 95% CI: 0.28-0.95). There was no reduction in unplanned admissions for Pakistani heritage patients (OR = 1.03 (95% CI: 0.66-1.64)).

White British 49%
Pakistani -

There was a statistically significant improvement in both health related quality of life (EQ-5D) (0.09; 95%CI: 0.05-0.12) and wellbeing (SWEMWBS) (3.59; 95% CI: 3.05, 4.13) in patients receiving the intervention. However, with no matched control group data we cannot be sure that this change was caused by the CLICS intervention.

Recommendations

This evaluation provides evidence of promise that the CLICS intervention may reduce unplanned hospital admissions. However, there is a risk that this intervention is having an unequal impact on the community by improving outcomes for White British patients but not for Pakistani heritage patients.

We would recommend that this intervention continue to be commissioned, but that this includes plans for a follow-up evaluation to improve confidence in these findings and to understand the longer term impacts on unplanned hospital admissions.

We would also recommend that the potential ethnic disparities in outcomes are explored further, starting with consultation with Pakistani patients, and including further in-depth analysis of these patients once there is a larger sample size. Depending on these findings it might be necessary to co-produce adaptations to the intervention to make it more beneficial to this group.

There was a higher rate of unplanned admissions at all time points in the matched control group. This suggests that CLICS may not be reaching those patients at the highest risk of admission.

A review of recruitment and referral processes is advised.

Background

What is CLICS?

The Central Locality Integrated Care Services (CLICS) is an intervention which integrates social prescribing and general practice that was introduced in central Bradford (Primary Care Network (PCN) areas 4, 5 and 6) in October 2020. The intervention is commissioned by Bradford City CCG (now Bradford District and Craven Health and Care Partnership) as part of the Reducing Inequalities in Communities (RIC) programme. The aim of CLICS is to integrate clinical and non-clinical services and combine health and community development input to offer patients tailored personalised care.

The model focuses on using social prescribing principles with the aim of reducing health inequalities in central Bradford. CLICS offers an individualised approach to supporting people by linking them to suitable community based assets (such as local groups, centres and services) that provide help with areas such as finance, food, mental health and disability. This is anticipated to reduce demand for reactive health care, in particular, unplanned hospital admissions. There are three main pathways through which CLICS is being delivered: One is through Advanced Practitioner at GP practices; the second is through Community Connectors at participating voluntary organisations such as HALE; the third incorporates a combination of both the Advanced Practitioner and the Community Connector pathways.

CLICS aims to recruit 1,500 patients per year of delivery, through two difference cohorts:

- *Proactive*: Those recorded as: being vulnerable to Covid (e.g., advised to shield during the pandemic); carers; new asylum seekers; diagnosed dementia; frail. From January 2022 additional criteria were added to this cohort: Those identified as likely to benefit from CLICS due to: a new diagnosis (e.g. cancer, chronic disease); a recent significant health event (e.g. cardiac event, fall); any other reason.
- *Reactive*: Those referred by GPs for any reason, but predominantly includes patients with 4 or more of 14 risk factors: aged 70 and over, BMI of 40+, chronic heart disease, chronic kidney disease, chronic liver disease, chronic neurological diseases, chronic respiratory diseases, diabetes, flu pregnancy group, frailty, hypertension, learning disabilities, spleen dysfunction and weak immune system.

What does the existing evidence tell us?

The main evidence of impact of social prescribing models comes from the Frome study [1] which reported a reduction in unplanned hospital admissions of 14% over a period of 44 months (3 years 8 months).

A recent systematic review of social prescribing [2] concluded that, whilst social prescribing is commonly advocated and widely implemented, there is no evidence yet of the impact and cost effectiveness of such interventions. A second systematic review and meta-analysis [3] found community-based case management did not reduce hospital admissions but did reduce A&E visits.

Local evaluation of a previous social prescribing pilot in Bradford suggested that this intervention may improve quality of life and reduce GP/hospital use for those receiving the intervention [4]. The intervention is also consistent with NICE recommendations on the importance of community engagement for reducing health inequalities [5].

Evaluation Aims

Aim of the evaluation

The main aim of this evaluation is to explore whether the CLICS intervention reduces the number of unplanned hospital admissions and improves the health and wellbeing of patients living in inner city Bradford.

The objectives are to assess:

- The impact of the CLICS intervention on unplanned hospital admissions
- Whether this impact differs by ethnicity
- Whether those who received the CLICS intervention experience a change in health-related quality of life and well-being
- If feasible, the cost consequences of the CLICS intervention

What will this study be able to tell us?

Using a matched control group allows us to provide causal evidence of the effect of CLICS on unplanned hospital admissions 12 months after discharge from the service.
If there are any differences in the effectiveness of the intervention by the patient's ethnicity.
If health related quality of life and wellbeing improve from the start to the end of the CLICS intervention.

What will this study not be able to tell us?

The longer-term impact of CLICS on unplanned hospital admissions (i.e., beyond 12 months). In the Frome model the significant effect was found 3 years and 8 months after the intervention. We can't look at the impact of this intervention on deprivation because the majority of the population are in the highest decile of the Index of Multiple Deprivation.

We do not have a matched control group for the health related quality of life and wellbeing measures therefore we cannot say if any change identified in these measures are caused by the CLICS intervention.

Study outcomes

The primary outcome is:

- Unplanned hospital admissions 12 months after discharge from CLICS

The secondary outcomes are:

- Unplanned hospital admissions 12 months after discharge from CLICS in White British and Pakistani patients
- Change in CLICS patients' health related quality of life, measured using the EQ-5D utility index [6, 7] at the start and end of the intervention.
- Change in CLICS patients' wellbeing, measured using the Short Warwick-Edinburgh Mental Wellbeing Scale [8] (SWEMWBS) scores at the start and end of the intervention.

Methods

Data

Unplanned hospital admissions

The data in this evaluation uses the Connected Bradford [9] dataset which stores linked health, education, social care, environmental and other local government data in a pseudonymised form for all individuals registered at GP practices across the Bradford District. The use of routinely collected health data in Connected Bradford reduces the resources that are usually required for data collection, and allows research to be undertaken that is based on outcomes directly relevant to policy and practice.

Data was extracted from Connected Bradford in March 2023, and included CLICS patients from the first year of the intervention delivery (October 2020 - October 2021) who had been discharged by 31st December 2021. This intervention group were then matched to a control group of patients with a ratio of 1:4 (intervention: control) based on age, gender, ethnicity, deprivation, the comorbid conditions used in the eligibility of the reactive CLICS cohort and level of unplanned A&E attendances. All patients who had died during the timeframe of this study were excluded from the analysis.

Health-related quality of life and well-being

These measures were collected by the intervention staff who asked CLICS patients to complete the health related quality of life (EQ-5D) and wellbeing (SWEMWBS) measures at the start and the end of their involvement in the intervention. No matched control group data was available for these measures.

Analysis

Unplanned hospital admissions

To explore whether CLICS reduces unplanned hospital admissions, we used the quasi-experimental method '*Difference in Differences*' analysis method [11]. This method calculates the effect of a treatment (CLICS) on an outcome (unplanned hospital admissions) by comparing the average change over time in the outcome for the treatment group to the average change over time for the control group. This method allows us to control for changes in admissions over time which could be caused by numerous different reasons, including COVID-19. It also helps to reduce the risk of selection bias. This is particularly suitable for the current evaluation where there is a lack of clear eligibility criteria for the intervention [12, 13, 14].

In this evaluation, the difference in differences analysis looks at:
The difference in the rate of unplanned admissions between CLICS and matched controls in the 12 months after discharge from CLICS MINUS The difference in the rate of unplanned admissions before any patients were discharged from CLICS.

DIFFERENCE 1: *Clics - Controls After Intervention* − DIFFERENCE 2: *Clics - Controls Before Intervention* = DIFFERENCE IN DIFFERENCES

Analysis

Unplanned hospital admissions

A sub-cohort analysis repeated the *Difference in Differences* evaluation separately for the two largest ethnic groups - White British and Pakistani heritage patients. We did not look at the 'other' ethnic group as this group contained a heterogeneous mix of different ethnic groups.

Health-related quality of life and well-being

To explore whether there were changes in health-related quality of life and wellbeing from the beginning to the end of CLICS we calculated the mean scores and standard deviations of the measures: The EQ-5D score was converted into a utility index which ranges from 0 (a state as bad as being dead) to 1 (full health); The SWEMWBS score provides a total continuous score from 7 to 35, with higher score indicating better wellbeing. These scores were derived into three categorical variables: 7-19 = low mental wellbeing, 20-27 = average mental wellbeing, 28-35 = high mental wellbeing [8]. A within-person regression analysis was then completed using the continuous scores for EQ-5D and SWEMWBS to look for a statistically significant change. This analysis also allowed us to explore whether patients' key characteristics were associated with changes in these measures.

Cost consequences

To identify a per person cost of receiving the CLICS intervention a per person cost of CLICS was calculated by dividing the total annual costs by the total anticipated number of CLICS patients per year.

Results

The Population

The Connected Bradford data set identified 917 CLICS patients who had been discharged from the service by the 31st December 2021. The matched control group included 3,668 patients.
In the CLICS group, the average age was 59.8 years (SD: 19.2), 575 (63%) were female, 342 (37%) were male, 399 (44%) were of Pakistani heritage, 243 (27%) White British and 275 (30%) from a wide range of other ethnicities. The majority of CLICS patients live in the lowest quintile of deprivation using the IMD index (n=659, 72%). Table 1, at the end of this report, shows that the CLICS intervention and matched control groups were closely aligned on these key criteria.

Unplanned hospital admissions

Figure 1 shows the monthly rate of unplanned admissions per 1,000 population for the CLICS and the matched control groups. The graph shows that, despite good matching on key characteristics there is a higher rate of unplanned hospital admissions in the matched control group than in the CLICS group. However, the trends over time are similar in both groups, most noticeably after the end of COVID-19 restrictions, where the rate of admissions increases in both groups before stabilising.

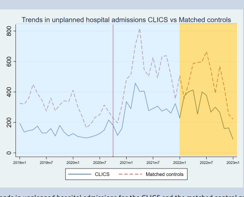

Figure 1. The trends in unplanned hospital admissions for the CLICS and the matched control groups (Note. The blue section represents the period BEFORE the introduction of the CLICS intervention. The red line depicts the start of the CLICS intervention. The orange section represents the period AFTER the CLICS intervention was introduced).

In the CLICS group, the total reduction in the rate of unplanned hospital admissions in the twelve months after discharge from CLICS was 14.6% (95% CI: 14.2- 15.0), (from n= 340, 37.1% to n=206, 22.5%). In the matched control group the total reduction was 9.8% (95% CI: 9.5-10.0), (from n=917, 25.0% to n=558, 15.2%).

17%

The difference in differences analysis found that the CLICS intervention reduced the odds of unplanned hospital admissions by 17% (Odds Ratio = 0.83 (95% CI: 0.62-1.12)).

However, the confidence interval in this analysis is wide meaning that we cannot be confident in this estimate – the true difference is likely to be anywhere between a 38% reduction and a 12% increase in unplanned admissions.

Unplanned Hospital Admissions

White British 49%
Pakistani -

Sub-analyses including only White British patients (n=243) found that the CLICS intervention reduced the odds of unplanned hospital admissions by 49% (Odds Ratio = 0.51 (95% CI: 0.28-0.95)). Sub-analyses including Pakistani heritage patients (n=399), found that CLICS did not reduce the odds of unplanned hospital admissions (Odds Ratio = 1.03 (95% CI: 0.66-1.64)) in this population.
The wide confidence intervals in the main analysis may be due to high levels of variance in the odds of unplanned hospital admissions within this population, with differential impact by ethnicity. A larger sample size and longer-term follow up should reduce the confidence intervals and enable better understanding of the potential differences between ethnic groups.

Health-related quality of life and well-being

357

Over a two year period of CLICS delivery, before and after measures were available for 357 patients. This is a small proportion of the total number of patients referred into the CLICS service (n=3,560). Table 2 at the end of this report shows the characteristics of those who completed these measures, compared to those who were referred into the service. Those who completed the measures were slightly younger (mean 53 years (SD 17)), more likely to be female (66%), and included a higher proportion of Pakistani heritage patients (53%) and a smaller proportion of White British patients (16%).

The small proportion of before and after data available and the differences in this population means that these findings might not accurately reflect changes for all CLICS patients, and there could have been some selection bias, with for example, those who did complete the measures being healthier than those who did not. Importantly, because we have no control data, we can't compare the changes over time for CLICS patients to non-CLICS patients. This means we do not know whether the changes reported here were caused by the CLICS intervention.

For the EQ-5D measure, 310 patients had both before and after scores. The average utility index score was 0.5 at the start of the intervention and 0.6 at the end. This difference was statistically significant, meaning that on average, CLICS patients' health related quality of life increased by 0.1 points [95% CI: 0.053-0.120] from the start to end of the CLICS intervention.

Health-related quality of life and well-being

For the wellbeing (SWEMWBS) measure, Figure 2 shows the change in categories (low, medium and high wellbeing) from before to after the CLICS intervention.

There was a large reduction in the number of patients reporting low wellbeing from before (n=178, 51.2%) to after (n=69, 22%) the intervention, and an increase in the number of patients reporting high wellbeing from before (n=23, 7%) to after (n=56, 18%).

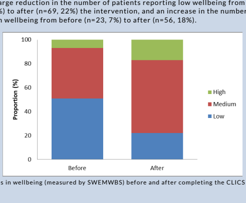

Figure 2. Changes in wellbeing (measured by SWEMWBS) before and after completing the CLICS intervention

The average SWEMWBS scores improved from 19.4 before to 23.1 after the intervention. This difference was statistically significant, meaning that on average, CLICS patients wellbeing increased by 3.6 points [95% CI: 0.053-0.120] from the start to the end of the intervention.

The ethnicity and gender of the CLICS patients was not associated with the changes on these two measures, however, younger age was positively associated with improved scores on the EQ-5D.

Cost consequences

£1,131

The annual cost of CLICS was budgeted as £1,697,137 (which included annual payments to City Health Federation and to the VCS for community connectors and community development costs). The estimated cost of CLICS is £1,131 per person per year. It is not feasible to conduct a cost effectiveness evaluation when we do not have an effect size that we are confident with (i.e., a change in unplanned hospital admissions where the confidence intervals do not cross 1). We also cannot use the change in health related quality of life to calculate cost efficiency because we do not have a matched control group.

Conclusions

This evaluation provides evidence of promise that the CLICS intervention may reduce unplanned hospital admissions. However the CLICS intervention may have a differential impact by ethnicity, our analyses found a significant reduction in the odds of unplanned hospital admissions for White British patients, but no difference for Pakistani heritage patients.

We also found an improvement in health related quality of life and wellbeing for those who completed the intervention, but we do not know if this was caused by the intervention.
To provide more confidence in these findings it would be important to revisit this analysis in the longer-term. In 12 months' time another 900 CLICS patients will have been discharged for 12 months or more which would increase the sample size and increase the confidence in our findings, and enable more in-depth exploration of the potential differential impact of CLICS by ethnicity. Re-visiting the sample in 3 years' time would also allow us to look for a longer-term impact on hospital admissions and compare this to the Frome model.

There were higher rates of unplanned hospital admissions in the matched control group across all the months analysed in this evaluation, despite these patients having similar characteristics to those in the CLICS intervention group. This finding has also been reported in other studies [14] of social prescribing. This difference in unplanned hospital admissions might mean that CLICS is not reaching those patients at most risk of unplanned hospital admissions.

Recommendations for Practice

- The CLICS service should continue to be commissioned, including funding for a follow-up evaluation to enable more robust evidence of effect to be determined. The evidence could be updated and reviewed in 12 and 24 months' time.
- CLICS may not be reaching those patients at highest risk of unplanned admissions. A review of recruitment and referral processes is advised, to ensure that patients at most risk of unplanned admissions are receiving suitable support and care.
- There is a risk that CLICS is having a greater impact on White British patients and limited impact on Pakistani heritage patients. The reasons for this are unknown and need to be explored further. We would recommend that the service undertakes consultation with Pakistani patients. If future evaluation with a larger sample size continues to show this effect it will be necessary to co-produce adaptations to the intervention to make it more beneficial for this population.

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Tables

Table 1. Key demographic characteristics of patients in the CLICS cohort and the matched control group.

		CLICS cohort n = 917	Matched controls n = 3,668
Age	18-25 years	40 (4.4%)	173 (4.7%)
	26-35 years	72 (7.9%)	254 (6.9%)
	36-45 years	131 (14.3%)	519 (14.1%)
	46-55 years	134 (14.6%)	569 (15.5%)
	56-65 years	129 (14.1%)	546 (14.9%)
	66-75 years	178 (19.4%)	655 (17.9%)
	76+ years	233 (25.4%)	952 (26.0%)
Gender	Female	575 (62.7%)	2,334 (63.6%)
	Male	342 (37.3%)	1,334 (36.4%)
Ethnicity	White British	243 (26.5%)	972 (26.5%)
	Pakistani heritage	399 (43.5%)	1,589 (43.3%)
	Other ethnic groups	275 (30.0%)	1,107 (30.2%)
Deprivation (IMD index)	1st most deprived quintile	659 (71.9%)	2,675 (72.9%)
	2nd most deprived quintile	105 (11.5%)	377 (10.3%)
	3rd most deprived quintile	19 (2.1%)	71 (1.9%)
	4th most deprived quintile	<10 (0.3%)	<10 (0.2%)
	Unknown*	131 (14.3%)	538 (14.7%)
Pre-existing health risk factors factor	0 risk	209 (22.8%)	817 (22.3%)
	1 risk factor	202 (22.0%)	818 (22.3%)
	2 risk factors	133 (14.5%)	576 (15.7%)
	3+ risk factors	373 (40.7%)	1,457 (39.7%)
	Carer	45 (4.9%)	189 (5.2%)
Pre-CLICS Unplanned A&E attendances	0		
	1	392 (42.7%)	1,574 (42.9%)
	>1	202 (22.0%)	777 (21.2%)

*Some cases in Connected Bradford do not have IMD assigned to them, and because this is a pseudo-anonymised dataset there is no way to assign this data to each patient.

Tables continued

Table 2. The characteristics and outcomes of CLICS patients who completed before and after measures.

	CLICS patients with before and after measures*	All CLICS referrals (N=3,560)
Age (Mean, SD)	53.2 (17.3)	56.6 (20)
Gender (N, %)		
Male	124 (33.8%)	1,445 (41%)
Female	243 (66.2%)	2,113 (59%)
Ethnicity (N, %)		
White British	60 (16.4%)	685 (20%)
Pakistani heritage	196 (53.3%)	1375 (39%)
Other ethnic groups	111 (30.3%)	1450 (41%)
CLICS Pathway (N, %)		
Advanced practitioners	33 (9.0%)	-
Community connectors	176 (47.8%)	-
Advanced practitioner & community connector	158 (43.2%)	-
EQ-5D utility index (Mean, SD)		
Before CLICS	0.5 (0.3)	-
After CLICS	0.6 (0.3)	-
SWEMWBS (Mean, SD)		
Before CLICS	147 (5.3)	-
After CLICS	192 (5.0)	-

*Total N=357; EQ-5D N=310; SWEMWBS N=332.

Tables continued

Table 3. The reduction in the rate of unplanned hospital admissions for White British and Pakistani patients before and after the CLICS intervention.

	Before n (%)	After n (%)	Difference % (CIs)
White British			
CLICS (N = 243)	110 (45.3%)	62 (25.5%)	19.8% (19.0-25.0)
Matched Control (N = 942)	299 (30.8%)	195 (20.1%)	10.7% (10.3-11.1)
Pakistani heritage			
CLICS (N = 399)	137 (33.6%)	87 (21.8%)	11.8% (11.2-12.3)
Matched Control (N = 1,589)	374 (23.5%)	219 (13.8%)	9.7% (9.4-10.2)

Technical appendix

Statistical power and minimum detectable effect size

For the effectiveness analysis, with the sample size of 917 patients, we had 80% power to detect an effect size of 0.125 Cohen's d. For comparison, the estimated effect size in the Frome study was 0.1.