Final Report: Evaluating the health impact and cost-effectiveness of Citizens Advice on Prescription, a whole system approach to mitigate poverty over the life course.

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1 Short form lay summary

Financial difficulties lead to poor health and increased mental health problems. Places like Liverpool have been experiencing increasing financial difficulties due to rising energy, fuel, food and housing costs. Health services can help people manage these financial problems, improving health. Liverpool's Citizens Advice on Prescription provides people using health services with advice and support to improve their financial and living conditions, for example helping them apply for welfare benefits, manage debt and improve their housing situation.

We investigated whether Citizens Advice on Prescription improved people's mental health and wellbeing and estimated how much it costs to deliver the service so we can compare the health benefits from investing in this service to the health benefit of investing the same amount of money in other health services. We interviewed people using the service and those involved in providing the service to understand what worked well and what did not.

We find consistent evidence using different methods that Citizens Advice on Prescription improved mental health and wellbeing. This included improvements in self-reported health, wellbeing, anxiety and depression following the intervention, alongside estimates that the intervention caused a reduction in antidepressant prescribing, GP consultations and A&E attendances, and qualitative accounts describing how the intervention led to these effects. Overall, we estimate that the intervention saved the NHS money. The characteristics of the service, that seemed to be important for effectiveness were; a simple and accessible referral approach; directly contacting clients; a trusting relationship providing expert advice and emotional support, the opportunity to re-engage with the service if needed and health care professionals who were confident talking with patients about their financial circumstances.

The evidence of this study indicates that expanding Citizens Advice on Prescription across the NHS could potentially help improve health outcomes for patients and save the NHS money.

2 Executive summary

Study Background:

Background: Individuals facing financial difficulties are at risk of poor health, contributing to the stark health inequalities between social groups that exist in the UK. Risks of poverty are increasing during the recent and ongoing crises, potentially exacerbating inequalities. The health and social care system is seeking to integrate anti-poverty measures into services to reduce health inequalities, however there is insufficient evidence to indicate the most effective approaches.

Intervention: The Citizens Advice on Prescription (CAP) intervention in Liverpool provides advice and support to reduce financial insecurity and improve living conditions among people using a wide range of health services

Objectives:

1. To quantify the mental health and wellbeing impact of CAP
2. To understand how participants' experience the CAP intervention, and the mechanisms through which it has or has not influenced their health and wellbeing.
3. To estimate the cost-effectiveness of the intervention and explore the public value and financial benefits generated.
4. To produce recommendations for action by engaging stakeholders and members of the public in synthesising findings.

Methods: We combine multiple approaches to achieve these objectives. Firstly, we explore the uptake of the service relative to measures of need between January 2018 and December 2023. Secondly, we analyse the change in service user reported wellbeing and health related quality of life outcomes from assessment to follow up and how this differs between referral pathway and intervention type. Thirdly, we utilise instrumental variable methods to assess the causal impact of the intervention on antidepressant prescribing and mental health related GP consultations, A&E attendances and Hospital Admissions. Fourthly, we use narrative interviews with service users to explore how the intervention interacts with people's lived experience and the mechanisms for impacts on mental health and wellbeing. Fifthly, we identified enablers and barriers to adapting and embedding the CAP into perinatal services, by interviewing key stakeholders such as referring professionals, commissioners and service deliverers. Lastly, we carry out economic evaluation estimating the intervention's cost-effectiveness and social return on investment.

Results.

Between 2018 and 2023, 30,502 people accessed CAP, representing an estimated 28,541 households, giving an estimated total of around 75,000 people living in households receiving support through the CAP intervention.

- The CAP clients were living with high levels of both socioeconomic and health needs. At least 70% of the cohort were living in poverty, 90% had long term health conditions and 78% had multiple health conditions. At the point they accessed support through CAP, they had extremely high levels of health care service use.

- Following the intervention clients experienced improvements in self-reported health (6 point increase at 6 months (95% CI 4 to 8), a reduction in anxiety and depression (7 percentage point decrease, 95% CI 3 to 12 and an improvement in mental wellbeing (0.95 point increase in SWMWBS score, 95% CI 0.34 to 1.55). Increases were greatest for people who had received support for specific welfare issues (e.g. advice on welfare benefits, housing, employment, debt or immigration). We found no evidence of differences in effect based on age group, gender, deprivation or ethnicity.

- We estimate that the intervention led to a reduction in antidepressant prescriptions (15 Average Daily Quantities per person per quarter, 95% CI 1 to 29), mental health related GP consultations (19 attendance per 100 people per quarter 95% CI 7 to 31), and mental health related A&E attendances (2 per 100 people per quarter 95% CI 1 to 4).

- Qualitative interviews highlighted the importance of a trusting relationship with the caseworkers and the organisation providing the service, the ease of accessing the service and simplicity of referral, the beneficial combination of practical and emotional support, the potential to re-engage if needed and legitimisation of conversations between health professionals and patients about patients' socioeconomic conditions.

- We estimate that the service was cost saving to the NHS, providing a net saving of £36 (95% CI from £51 net saving to £10 net cost), per member of each household who had been supported through CAP.

- The overall service gave an estimated positive SROI return of £1: £4.69.

Recommendations.

- The evidence from our study suggests that expanding the provision of Citizens Advice on prescription would improve health outcomes for patients and save the NHS money. This evidence I likely to be transferable to other contexts that are similar to Liverpool. Implementation in other contexts should take place within an evaluative framework that enables rapid learning and adaptation to specific contexts. This can be helped by using linked data as we have outlined in this report and would be helped by staggered roll out of the model ideally with some element of randomization. Previous studies have found it is not feasible to recruit people for Randomised Controlled Trials for such interventions, where people are facing severe crises.[1] A stepped wedged cluster randomised trial supported by linked data infrastructure to enable follow up, would potentially be feasible and should be considered.

- Our study demonstrates the benefits of routinely linking data from services such as Citizens Advice on Prescription with electronic health records enabling monitoring of uptake to ensure identification of unmet needs, targeting of high-risk groups and evaluation of health impacts. Such data linkage should be routinely supported across the NHS through its regional secure data environments.

- The evidence indicates that an effective model is one that focuses on the provision of expert welfare advice and support to people with high levels of health and socioeconomic needs, accessed through health services. This does not preclude other more preventative actions that are needed to reduce risk of poverty and prevent crises in the first place, but it does suggest that providing access to a service such as CAP, when people are facing crises is effective at mitigating some negative health impacts, and supporting system resilience to shocks and crises that inevitably will occur.

- The study findings indicate that the components of an effective CAP service should include, a simple referral system without complex eligibility criteria and rapid access with patients pro-actively contacted and by the service provider. High levels of trust are needed, between patients and individual case workers and with the organisation providing the service. A physical presence of the service in health and community settings was seen as important. A non-judgemental, person-centred service is needed with staff trained in emotional support as well as expertise in advice areas. The service should include regular checking in with service users and the opportunity to re-engage with the service if needed.

- The introduction of CAP into new areas, needs to be supported by outreach with patients and relationship building activities with health professionals and managers to enable the service to become embedded as business as usual alongside other more clinical priorities. Implementation should recognize that its takes time to normalize conversations between health professionals and patients about their socioeconomic circumstances. The availability of a service that health professional can offer builds the confidence of health professional over time to better assess and respond to these patient needs.

Impact.
The CAP evaluation has had immediate impacts within the Cheshire and Merseyside Integrated Care system. During the study the re-tendering process for the service commenced and evidence from this study was crucial in making the case for the continued funding of the scheme. Evidence from the research in relation to referral rates across services and population groups was also used during the research programme to inform outreach activities. Working with the Department for Health and Social Care, the NHS and local government organisations across UK we aim to use the evidence presented here to promote the uptake of Citizens Advice on Prescription schemes, inform models adopted and their further evaluation.

3 Description of the research

3.1 Changes from original research application.

A number of changes were made to the original proposal during the research process in consultation with the project steering group. We had originally planned to investigate 2 child health outcomes, The Ages and Stages Questionnaire, that is offered to all children in England around their second birthday. Whilst this data was available, on closer inspection it was incomplete for a high proportion of children and therefore not useable for the analysis. We also planned to investigate low birth weight, however mother to child data linkage had not been completed within the NHS data environment, so we were unable to conduct this analysis. The initial plan for the quasi-experimental analysis of the intervention impact had been to use matching of the intervention cohort to a comparable non-intervention group. However, as our analysts showed such extremes of health care utilization by the intervention cohort at the point of intervention, it was not possible to robustly match to a comparable group. We therefore adapted our approach to use an alternative instrumental variable analysis which was more likely to provide an estimate of the causal impact of the intervention. We had initially planned on analyzing data from 2014, however due to a change in case management software at Citizens Advice Liverpool it was no longer possible to link data from before 2018.

3.2 Background

Individuals in more disadvantaged social positions have reduced access to resources which promote health[2,3] with low income in particular leading to poor health outcomes. [4,5] This leads to stark inequalities in health between social groups in the UK. A number of national welfare policies in recent years have increased the risk of poverty for some groups and this is having an adverse impact on health, increasing health inequalities[6] and costs to the health and social care system.[7,8] The COVID-19 crisis has exacerbated these inequalities, hitting the most disadvantaged communities hardest, particularly children and Black, Asian and Minority Ethnic (BAME) groups.[9]

In response to this the Citizens Advice on Prescription (CAP) service has been implemented in Liverpool to ensure that people using health services across have access to advice and support that aims to reduce financial insecurity and alleviate poverty. CAP is a partnership between the NHS and the charity Citizens Advice Liverpool and was introduced in primary care and mental health services in 2014. It was extended into respiratory services in 2018 and in 2020-21 into antenatal, health visiting, integrated health and social care teams and emergency services.

There have been several projects providing welfare advice in primary care across the UK.[10,11,12] The available evidence suggests that these deliver measurable financial benefits for patients, mostly in the form of accessing unclaimed welfare benefits and help with managing debt.[13,14] Other studies have found that such projects can help with housing issues and relationship problems, for example those linked to domestic abuse.[14,15,16] Qualitative studies report improvements in physical and mental health, improvements in living and working environments, and the increased ability to spend on assets which can improve health.[17,18,19] Most evaluations have focused on process and social outcomes[20] with only a few uncontrolled studies finding that welfare advice interventions in primary care were associated with improved health,[21] reduced GP consultations and prescriptions .[22,23.] One RCT delivering Welfare rights advice to older people (>60 years old) in their own homes found no evidence of impact on health-related quality of life. However, only 84 patients in this trial experienced income improvements from the intervention. A recent pilot trial demonstrated that even careful intensive trial design and management failed to recruit to time and target from disadvantaged populations, so was unable to proceed.[24] To our knowledge there have been no robust controlled UK studies indicating whether widespread implementation of welfare advice across a health system leads to improved health outcomes or reduced health care utilisation.[13,14] A major limitation of most studies has been small sample sizes and lack of longitudinal follow-up and control groups to investigate the impact of advice interventions on health outcomes.[14] Given the lack of empirical evidence of health impact, it is unsurprising that that there is little economic evaluation of cost effectiveness or cost-benefits. Whilst Citizens Advice have conducted cost-benefit analysis to identify the financial impact of their services, this has not previously been informed by empirical estimates of programme impact.[25]

Many NHS organisations and health systems in other countries are investing in approaches to better address patients' socioeconomic needs, however, there is insufficient evidence to indicate the most effective approaches for integrating poverty mitigation support into health services. CAP is being implemented at a larger scale and in more diverse settings than previous similar initiatives, presenting a unique opportunity to evaluate the impact of poverty mitigation measures across multiple services.

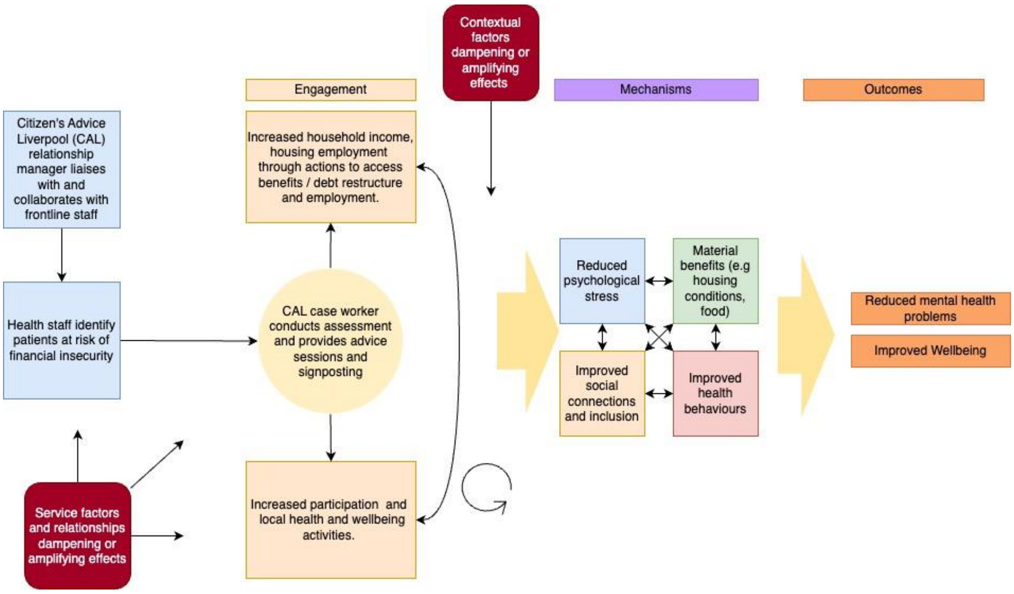
The Citizens Advice on Prescription intervention.

Patients accessing health services are identified by health care professionals as experiencing or at risk of financial hardship and referred to Citizens Advice on Prescription (CAP) either via telephone or secure email. There are no specific eligibility criteria, with referrals based on health practitioners' professional judgement. CAP case workers liaise with frontline health workers to raise awareness, provide training and encourage referrals. The CAP case worker then contacts referred patients within 48 hours. On contacting them they carry out a preliminary telephone assessment and arrange follow-up to conduct a holistic assessment with each client, to help them identify potential actions and prioritise changes they want to achieve. A tailored plan of support is developed, often involving multiple sessions, that may include help with financial issues, welfare benefits, housing difficulties, debt, fuel poverty, relationship breakdown, bereavement, domestic abuse and social isolation, as well as signposting to local health and wellbeing services. The intervention was initially introduced in 2014, however the services that have been able to refer into CAP have expanded over time. The service was initially piloted in a small number of Liverpool GP practices in 2014 and was extended to all practices in 2015. Between 2018-2023 the intervention was further extended to include other health services. Citizens Advice also provides social prescribing link workers for some GP practices in Liverpool who can refer into CAP.

Conceptual model.

Our conceptual model was informed by the existing research outlined above and our previous qualitative research with service users as part of an NIHR funded pilot study of Debt Counselling for Depression in Primary Care – the DeCODer project.[24] This highlighted the importance of a close working relationship between case workers and health professionals in initiating patient engagement with support. [24] We see the contact with the CAP service as an event introduced into the lives of people who have multiple interrelated health and social problems, that has the potential to influence their material and psychosocial resources for health through multiple pathways.[26] These interactions could initiate a virtuous cycle of events or alternatively the complexity of people's lives could override any potential benefits from the intervention. Our previous work indicates that the opportunity to discuss financial and other social problems with a case worker can itself have beneficial psychological benefits. The CAP programme is further hypothesised to lead to (1) income maximisation and improved debt management increasing household income and (2) increased access to other support such as housing or employment support, educational and training services as well as local health and wellbeing activities. These interact, in that greater financial security may help people to participate in other activities, and these other activities (e.g training) may increase income and financial security. This social engagement and increase in financial security then potentially leads to health improvement through four main interacting mechanisms: reduced psychological stress, improved material conditions (e.g. housing, food etc.), improved social connections resulting in reduced isolation and improved health behaviours (e.g. increased physical activity, improved diet). There are potential feedback loops whereby improved mental health and wellbeing may enable greater engagement and financial security (see Figure 1). How these mechanisms interact within the contexts of people's lives may potentially amplify or dampen health promoting changes. Our research investigates these pathways by combining robust quasi-experimental methods with qualitative investigation of both the lived experience of participants who have received the intervention and perspectives of professionals delivering the intervention.

Figure 1. Logic model highlighting pathways through which the CAP programme is expected to impact on health.



1. Aims and objectives.

This research evaluates the impact of the CAP intervention on health outcomes, healthcare utilisation and inequalities in health by meeting four key objectives:

5. To quantify the mental health and wellbeing impact of CAP
6. To understand how participants' experience the CAP intervention, and the mechanisms through which it has or has not influenced their health and wellbeing.
7. To estimate the cost-effectiveness of the intervention and explore the public value and financial benefits generated.
8. To produce recommendations for action by engaging stakeholders and members of the public in synthesising findings.

3.3 Methods

The evaluation uses multiple research components to understand the impact of the CAP programme in Liverpool. Firstly we explore the uptake of the service relative to measures of need and the profile of the CAP clients between January 2018 and December 2023. Secondly we analyse the change in service user reported wellbeing and health related quality of life outcomes from assessment to follow up and how this differs between referral pathway and intervention type. Thirdly we utilise instrumental variable methods to assess the causal impact of the intervention on health utilisation outcomes. Fourthly we use narrative interviews with service users to explore how the intervention interacts with people's lived experience and the mechanisms for impacts on mental health and wellbeing. Fifthly we carry out economic evaluation estimating the intervention's cost-effectiveness and social return on investment. In this section we describe the methods of each of these components, presenting the findings from these in section 3.4.

3.3.1 Uptake and profile of CAP clients

To understand the service uptake and profile of CAP service users, we used an extract of data from Citizens Advice Liverpool's case management system on all clients who have accessed the CAP service between January 2018 and December 2023. Within this data we define a client as any individual who has accessed CAP at any point during this period, a case is a referral to CAP for a specific set of issues. In other words, one client can result in multiple cases if, at separate time periods, the same person has had multiple referrals for different issues. Within this data we define 3 referral pathways into the service.

Box 1. Referral pathways.
Primary Care: People who have been referred from General Practitioners or link workers working for primary care networks.
Secondary Care: People referred through secondary care particularly patients referred from respiratory, mental health services, urgent care, cancer care, and Macmillan support.
Perinatal service: Referrals from health visiting, midwifery teams, children's centres.

There are broadly two forms of support that people receive through CAP, support to address welfare issues and wider wellbeing support connecting people to community activities. As wider wellbeing support was not always clearly recorded in the data, we defined two groups of clients in the analysis, those who had received some support for a welfare issue (i.e a welfare issue was recorded in their case record) and those who only received wellbeing support (there was no record of a welfare issue in their data). A case was defined as having a welfare issue recorded if issues related to welfare benefits, health services, social services, discrimination, immigration, legal advice, debts, relationships, food, housing, employment, utilities or transport were recorded in their case record.

We initially conducted a descriptive and graphical analysis assessing:

- The uptake of the service by ethnicity, deprivation, long term condition, age, gender, households with children and how this varies by referral pathway and intervention type and has changed over time.
- The type of issues that clients receive support for through CAP and how this has changed over time.

We then used an anonymised linked dataset covering the whole population of Liverpool between 2018 – 2023, (497,000) including data from primary and secondary care records linked with the case management system of Citizens Advice Liverpool. These datasets were all pseudonymised and linked by NHS digital's Data Services for Commissioners Regional

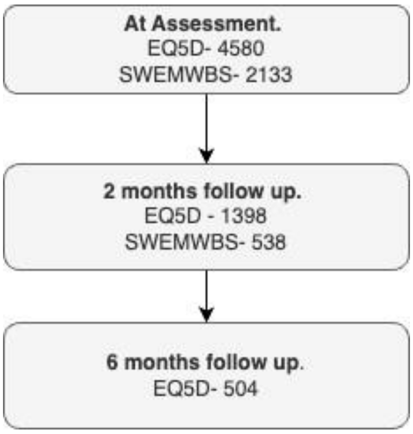
Office (DSCRO), anonymised data was then shared with NHS Cheshire and Merseyside for the analysis. The NHS has matched addresses to Unique Property References numbers enabling anonymised household indicators to be provided with the data supporting analysis of household level effects. The NHS were only able to exactly match 68% of CAL clients to an NHS record. We use these matched records to provide analysis of the health conditions and levels of health care utilisation of people using CAP during this period.

3.3.2 Change in self-reported outcomes.

Data were collected by Citizens Advice Liverpool caseworkers on clients at assessment and at follow up, between January 2022 and November 2023, using two questionnaires, the EQ-5D-5L[27] and the short Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS).[28] The EQ-5D measures health-related quality of life using five dimensions: mobility, self-care, usual activities, pain/discomfort and anxiety/depression. Each dimension has 5 levels: no problems, slight problems, moderate problems, severe problems and extreme problems. SWEMWBS measures a range of aspects that affect mental wellbeing, including levels of stress, social connection, and self-confidence. The questionnaire consists of seven statements; I've been feeling optimistic about the future; I've been feeling useful; I've been feeling relaxed: I've been dealing with problems well; I've been thinking clearly; I've been feeling closer to other people; I've been able to make up my own mind about things. Participants are asked to answer, based on how they have been feeling in the last two weeks, giving a rating for each question of 1 (none of the time) to 5 (all the time), with a possible overall score range of 7 to 35.

For The EQ5D this was included in the initial assessment for all CAP clients, case workers then followed up a sample of service users and administered the EQ-5D-5L over the telephone at 2- and 6- months post assessment. For the SWEMWBS data was collected at initial assessment for a limited time period (March 2022 to November 2023) then a sample of these clients were re-administered the SWEMWBS at 2 months post intervention. These data were also included in the anonymised linked data outlined above. Figure 2 gives a flow chart showing the number of questionnaires at assessment and each stage of follow up.

Figure 2. Flow diagram for collection of EQ-5D outcome data.



We analyzed 4 self-reported outcomes derived from these questionnaires, as outlined below:

EQ-5D index. This index was derived from the answers across all five domains of the EQ5D-5L and provides a summary assessment of how good or bad the health state of service users is according to the general preferences of the population. The index is computed by applying a formula that attaches value sets (weights) to the responses from each of the five dimensions. The value sets are obtained from a standardised valuation exercise from a representative sample of the general population in the UK. This gives an index between 0 and 1 where value '1' is full health and '0' is a state as bad as being dead.

Self-reported health. This is derived from a visual analogue scale (VAS) that is part of the EQ5D-5L where respondents are asked to rate their health between 1 and 100, where 100 is better health.

Anxiety and depression. In the anxiety/depression domain in the EQ-5D, respondents are asked if they are: not anxious or depressed, slightly anxious or depressed, moderately anxious or depressed, severely anxious or depressed or extremely anxious or depressed. This domain has been found to be a valid screening tool for clinically relevant anxiety and depression as compared to the Patient Health Questionnaire 9 and Generalized Anxiety Disorder 2-item questionnaires routinely used in general practice. [29] For interpretability we analyze the proportion reporting that they were severely or extremely anxious or depressed.

SWEMWBS score. This is a composite score derived from the responses to each of the survey questions. This is calculated first summing the scores for each of the seven items, which are scored from 1 to 5. The total raw scores are then transformed into metric scores using the SWEMWBS conversion table

To assess the change in each of our three outcomes we used regression models for longitudinal data comparing the change in outcomes between assessment and stage 2 (2 months) and between assessment and stage 3 (6 months). For EQ-5D index, EQ5D VAS and SWEMWBS we used linear regression, and for anxiety and depression we used logistic regression. To account for response bias and loss to follow up we derived response weights for each stage of follow up calculated as the inverse probability of each individual responding, based on the respondent's ethnicity, age, deprivation level of neighbourhood of residence and referral pathway into the service. We then use these as weights in each of the regressions.[30] This means that the estimates of change are adjusted for differences in non-response in relation to these characteristics. Regression models used clustered standard errors to account for variance within individuals. Interactions between follow up time period and, individual characteristics, referral pathway and intervention type, were used to investigate whether change in self-reported outcomes following the intervention differed by these factors.

3.3.3 Instrumental variable estimate of the impact of Citizens Advice on Prescription on household health care utilisation outcomes.

To investigate the causal effect of the CAP on health care utilisation outcomes we use an instrumental variable approach. Further detail of the methods is given in the associated paper.[31] As we did not have data across the population indicating whether people had experienced the kind of financial, social or health crises that are leading people to take up CAP, we could not match people receiving CAP to others who have experienced the same social welfare shocks but did not receive support from CAP. This means that other methods that rely on selection on observables such as difference-in-differences, propensity score matching or inverse probability of treatment weighting are unlikely to provide an unbiased estimate of the interventions effect.[32] We therefore use an instrumental variable approach.

To be valid our instrument must only be associated with our outcomes through its effect on the probability of receiving the intervention, conditional on any other observed mediators and confounders.[33] We use a preference-based instrument, an approach that has been applied frequently in previous medical research using physician, [34–36] region, [37,38] or provider[39,40] preferences for treatments as an instrument to estimate causal effects. GP practices are the main referrers into the CAP intervention, however there is a great deal of variation in referral rates between GP practices that is not explained by differences in population need. Some practices are much more likely to refer patients into CAP than others, this is largely due to some having provided the service for longer, being more engaged in the service or also having social prescribing link workers provided by Citizens Advice. We use the rank of the 96 GP practices in Liverpool according to the proportion of their population referred into CAP from before the pandemic (2017-2019) as our instrument as this provides a good measure of the propensity of a practice to refer into the service, conditional on other indicators of population need (e.g deprivation, age and morbidity, past A&E attendances, admissions and prescribing rates both at the individual and GP practice level).

Using the linked dataset on the whole population of Liverpool outlined above we define the intervention group as all people in households that had newly received support through CAP in 2021-2023 (households previously receiving support in 2017-2020 were excluded from the intervention group) whose data could be linked with health care records. There were 12042 new recipients of CAP services during this period, and the NHS was able to find exact matches in health records for 8205 people (68%) from 7828 households. We defined members of households as in the intervention group if they lived at the same address (UPRN) as an individual who was recorded as receiving CAP. We analyse impact at the household level as the intervention is focused on alleviating poverty which will affect the whole household. This provided 20,773 in our intervention group of members of households who had received support from CAP (mean number of people per household= 2.7).

The intervention date was defined as the quarter in which the individual was first recorded on Citizens Advice's case management system. As the intervention dates are staggered throughout the year and we do not have an "intervention date" for the individuals who did not receive the intervention, we applied a 'placebo' intervention date to each individual in the non-intervention group by randomly sampling from the intervention dates from the intervention group. This means that the placebo intervention date follows an identical distribution in the two groups and the average follow up time is identical and follows the same seasonal distribution. We only include people in the sample with at least 3 months follow up time after their intervention date. We use 4 outcomes in this analysis as outlined in Box 2.

Box 2. Health Care utilisation outcomes

- **Anti-depressant prescriptions**, measured as the Average Daily Quantity (ADQs) of Antidepressants prescribed per person following the intervention date. ADQs are a standardised way of measure prescribing quantities used by the NHS in England.[41]
- **Mental health related GP consultations, measured as the** number of mental health related GP consultations per person following the intervention date, defined as contacts with a GP or nurse in general practice that was coded on the GP clinical system with one or more of a set of mental health related codes

- **Mental health related A&E attendances**, defined as the quarterly A&E attendances coded as mental health[42]
- **Mental health related emergency admissions** defined as overnight hospital admissions, coded as mental health related.

Codes used to define each outcome are given in Appendix 1.

Other covariates used in this analysis included age, age squared, sex, Indices of Multiple Deprivation (IMD)[43] of the neighbourhood in which each person lived, diagnosis with depression, anxiety, severe mental illness, alcohol or other substance abuse. We used IMD as a measure of deprivation as we only had individual measures of income (recorded in Citizen's Advice case management data) for people who had received the intervention. We included several measures to reflect pre intervention levels and trends in mental health outcomes including number of GP consultation for mental health reasons, anti-depressants ADQs prescribed, number of A&E attendances for mental health reasons, in 2018-2020 and in the quarter before receiving the intervention. To account for differences between GP practices in access to services and propensity for prescribing and admission we included the GP practice average rates for each outcome 2018-2020 and the % reporting difficulty in accessing GP practice in GP patient survey in 2019.

Our estimate of the effect of the intervention on each of the outcomes was then computed using a two stage least squares regression.[33,44] In the first stage the first stage we model receipt of the intervention in 2021-2023 as a function of our instrument and a set of control variables, at the individual and GP practice level. The second stage is a similar linear regression of each of our outcomes regressed on the fitted values from the first stage, and the same set of control variables.

$$\mathrm{CAP}_{ij}=\mathrm{d}\boldsymbol{Z_j}+\mathrm{g}\boldsymbol{G_j}+\delta\boldsymbol{X_{ij}}+\mathrm{u}_{ij} \quad (1)$$

$$Y_{ij}=\hat{a}CAP_{ij}+b\boldsymbol{X_{ij}}+\theta\boldsymbol{G_j}+e_{ij} \quad (2)$$

Where CAP_{ij} is the receipt of the intervention by individual *i* in GP practice *j* in 2021-2023. $\boldsymbol{Z_j}$ is our instrumental variable and $\boldsymbol{X_{ij}}$ is a set of controls for individuals and $\boldsymbol{G_j}$ set of controls for GP practices. Y_{ij} refers to each of our health care utilisation outcomes and X is a set of controls. We repeat this procedure for each of our 4 outcomes including as controls age, sex, IMD, diagnosis with depression, anxiety, severe mental illness, alcohol or other substance abuse, the pre-intervention average individual level of the outcome in 2018-2020 and in the quarter before intervention, the GP practice average rates of the outcome 2018-2020 and % of the practice registered population reporting difficulty in accessing a GP.

3.3.4 Understanding the service-user and stakeholder experience of the W2W intervention.

Semi-structured narrative interviews with 19 service users were used to explore how the intervention interacted with people's lived experience and the ways in which this influenced their mental health and wellbeing. Ten of the 19 participants were interviewed twice (an initial interview and a follow-up interview approximately two months later) providing a total of 29 interviews. As we were initially unable to recruit service users representing the perinatal referral route, a focus group was conducted with 10 service users. Details of the recruitment and consent process are provided in the companion paper.[45] Interviews and focus groups were conducted between June 2022 and January 2024. The number of participants representing each referral pathway is shown in Table 1.

Table 1. number of interview respondents, by Referral pathway

Referral pathway	**Male**	**Female**	Total
Primary Care	7	3	10
Secondary care	1	5	6
Perinatal (focus group)	0	10	10
Other	0	2	2
Unknown	1	**0**	1
Total	**9**	**10**	29

Interview topic guides were designed to encourage participants to reflect on their experience and tell their story in their own words. Initial interviews covered the events leading to referral, experience of the service, and the impact on their health, wellbeing and situation. Follow-up interviews aimed to capture changes since the initial interview. The focus group was designed to elicit participants' general experience and views of the service, rather than their individual stories. We stopped collecting data once we had reached 'theoretical sufficiency'.[46] This acknowledges that every story and experience is unique, making it unrealistic to aim for 'saturation', where we could be confident that conducting further interviews would not yield additional analytic themes.

To ensure that the public voice was incorporated into the analysis from the start, one transcript was anonymised and shared with and discussed at a meeting of the entire qualitative research team, including the five Public Advisers. We discussed the text's meaning in relation to the participant's experience and the possible wider implications of their experience. Notes made during the discussion were used to guide the formal analysis.[47]

Following the initial discussion, the primary researcher read and re-read each transcript to get a sense of the range of stories the participants were telling, before converting the transcripts into ordered 'narratives'. This involved deleting any irrelevant or duplicate text and re-arranging the relevant text into chronological order of events, followed by the participant's reflections on the events. This process retained the participants' own words and expressions. Transcripts for baseline and follow-up interviews were incorporated into one narrative, noting where changes had occurred between the time points.[48]

Two researchers then read four participant narratives each and agreed by discussion on the common story components of the narratives, guided by the initial impressions recorded from the whole team discussion. These formed the coding frame for the remaining transcripts, which were coded by the primary researcher. Where we encountered data that did not fit into these initial components, we added a new component. While coding we also identified common story trajectories across the narratives and differences between different typologies. We paid particular attention to points in the story where change occurred, and what seemed to be the catalyst or necessary condition for that change.

In addition, we conducted 15 semi-structured interviews with selected stakeholders, involved in the perinatal referral pathway between July 2022 - August 2023, to elucidate key roles and relationships between and within health and care (NHS, private and third sector) organisations. We focused on the perinatal pathway as this was the most recent expansion of the service into a new service area. We sought to understand what had enabled or constrained action to implement and embed a service which identifies and supports women in need in the perinatal period. We recruited participants purposively through health and care services that refer patients to the intervention, seeking out 'key informants'; that is health professionals who are working with groups of people particularly targeted by the LCAP intervention and had experience relevant to the study. The analysis of stakeholder interviews used narrative and constant comparative approaches to develop thematic analysis.[49,50].

3.3.5 Economic evaluation

3.3.5.1 Calculating the social return on investment

The estimate of the Social Return on Investment (SROI) followed the approach outlined in the 2012 Cabinet Office Guide to Social Return on Investment.[51] The cost for CAP service provision were the only costs included in this evaluation. Service costs were calculated as average service costs per service user, using total service costs for the financial year 2022-23 (the only full financial year during the evaluation), divided by the total number of unique service users during this financial year. Service costs were provided by Citizens Advice Liverpool including overhead and room hire costs, staff costs, community partner payments, data and administration costs. The outcome for the SROI was the improvement in service user’s mental wellbeing following the intervention measured as the difference between SWEMWBS score at 2 months follow up compared to SWEMWBS score at assessment. Mental wellbeing valuation using the SWEMWBS questionnaire is an established and robust method for estimating the financial (social) value of health and wellbeing-related outcomes that does not have a market value.[52] The Mental Health Social Value Calculation was used to allocate financial valuations to the SWEMWBS total score, with changes in SWEMWBS scores at baseline and follow-up used to calculate change in social value generated.[53]

Acknowledging that a proportion of the change in outcomes would potentially have happened anyway a 27% standard deadweight percentage was subtracted from the total change in SWEMWBS values, as recommended by established methodology.[52] Deadweight is a method used to consider the reference case i.e. outcomes that would have occurred at the end of the intervention life, if the intervention was not implemented. It is used as a proxy for the level of change that would be seen in a control group, and it is based on average deadweight changes reported by intervention type in the Additionality Guide (publishing.service.gov.uk). As SROIs using the SWEMWBS questionnaire are measuring changes in health, we use the average deadweight value of 27% reported for health -see section 3 table 3.3 of Additionality Guide. This approach is in-line with the HM Treasury Guide to Appraisal and Evaluation methodology for evaluating interventions with no available control group The Green Book: appraisal and evaluation in central government
- GOV.UK (www.gov.uk).

SROI ratios were then calculated to compare the social value change per participant, compared to the service cost per participant, with the SROI ratio expressed as the social value created per GBP 1 invested in the service:

SROI ratio = Social value change per participant
Cost of CAP service per participant

To investigate differences between types of service, we calculate the SROI separately for the 3 referral pathways.

SROI sensitivity analysis took into account the range of change in service users' mental wellbeing due to the CAP service, as opposed to other factors in their lives (i.e., the level of service attribution). It also considered whether service users had to give up any other services or activities that could impact on their mental wellbeing in order to take part in the CAP service (i.e. the level of displacement). Levels of attribution, displacement, and the length of time service users expected the impact of the service to last (i.e., the drop-off rate) were collected alongside the semi-structured narrative interviews using a health economics questionnaire designed for this study. Further details of the approach are given in our associated paper.[54]

3.3.5.2 Modelling the net costs and impact on quality adjusted life years.

Estimates from the instrumental variable model indicated the effect of the intervention on each of the four health care utilisation outcomes amongst members of households supported by CAP. We calculate any cost saving or additional costs to the NHS resulting from a reduction or an increase in these outcomes using the NHS average estimated tariff costs for mental health related A&E attendances and emergency admissions in Liverpool during this time period calculated from the NHS secondary User Service data for Liverpool.[55] For antidepressant prescribing we use the net ingredient costs per ADQ of antidepressants of the and for GP consultations we use the Unit Costs for Health and Social Care 2023 developed by the Personal Social Services Research Unit (University of Kent).[56]

To quantify the effect estimates from the instrumental variable analysis in terms of QALYs we assume that a negative effect on the health care utilisation outcomes (i.e a reduction in prescriptions, consultations, admissions, attendances), is the result of some health improvement (or lower deterioration in health than would be expected in the absence of the intervention) leading to reduced health service need. As outlined above we collected EQ5D-5L data at assessment and at 2 months and 6 months of follow up. This data was also linked with health care utilisation data. We were therefore able to observe within the intervention group the extent to which an individual change in each of the health care utilisation outcomes was associated with a change in their EQ5D index. We estimate this based on a fixed effects panel regression model:

$$EQ5D_{ij} = \beta Y_{ij} + t + \boldsymbol{u_i} + e_{ij} \quad (3)$$

Where $EQ5D_{ij}$ is the EQ5D index for person i at quarter j, Y_{ij} are the 4 health care utilisation outcome measures for person i at quarter j, t is a trend term for time and $\boldsymbol{u_i}$ is a person fixed effect. We then use the coefficient in formula 3 to model the estimated EQ5D index change associated with the change in our health care utilisation outcomes estimated from the instrumental variable analysis. Assuming this effect is maintained over the year following the intervention this gives an estimate of the QALY equivalent of the intervention effects estimated from the instrumental variable model.

We estimate the net cost of the service as the cost of the intervention per household, calculated as outlined above, subtracting the estimated cost savings to the NHS resulting from reduced prescribing, A&E attendances, GP consultations and Emergency admissions estimated from the instrumental variable analysis. We then provide an estimate of the net costs per QALY by dividing the net costs by the estimated QALY gain as outlined above.

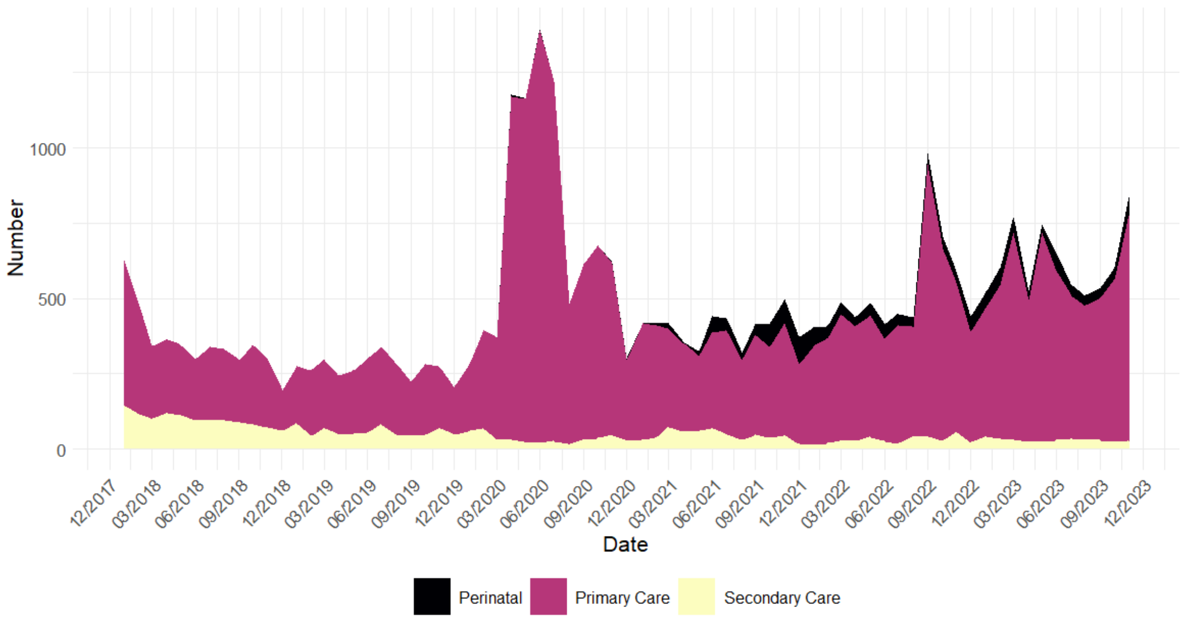
3.4 Results

3.4.1 Uptake and profile of CAP clients

Analysis of Citizens Advice Case management data.
Between 2018 and 2023 there were 30,502 people supported through CAP, representing an estimated 28,541 households. Each person had on average 2.8 cases with CAP, giving 87,848 cases in total. We estimate that each household includes on average 2.7 people giving an estimated total of around 75,000 people living in households receiving support through the CAP intervention, during this time.

Figure 3 shows the trends in the numbers of people and the number of referrals/ cases by referral pathway. The number of people accessing the service was steady prior to the pandemic at around 250 per month. There was a large increase during the pandemic. This in part reflects pro-active support provided to vulnerable people as part of Liverpool's Covid response in support of the clinically vulnerable, whereby people were pro-actively contacted by CAP, Health Trainers and link workers to identify those who needed additional support. Following this peak, utilisation of the service has remained higher than pre-pandemic levels, with around 500 new people accessing the service each month. The majority of people access the service through primary care and numbers of clients accessing the service through secondary care has reduced over time.

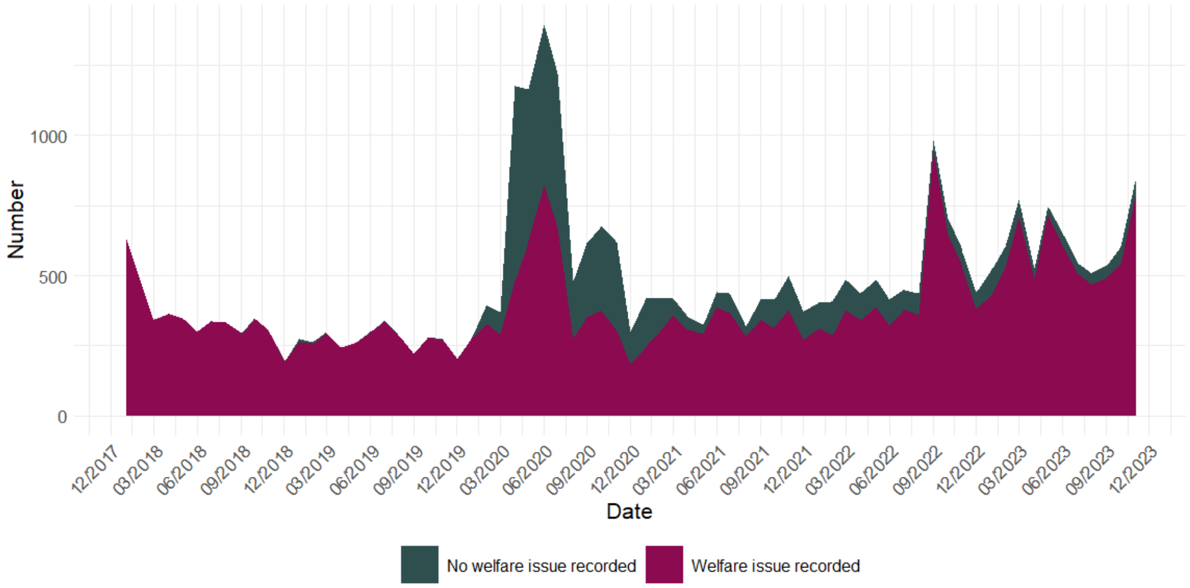
Figure 3. Monthly number of clients by referral pathway.



Source:CAL

Figure 4 shows the number of clients where a welfare issue was recorded in the casebook record, and those for whom no welfare issue was recorded, and presumably just received wellbeing support alone. Most clients receive support for one of more welfare issue. The proportion receiving wellbeing support along increased during the pandemic and remained higher until 2022, but has reduced more recently, potentially reflecting an increase in welfare needs as a result of recent increases in the cost of living.

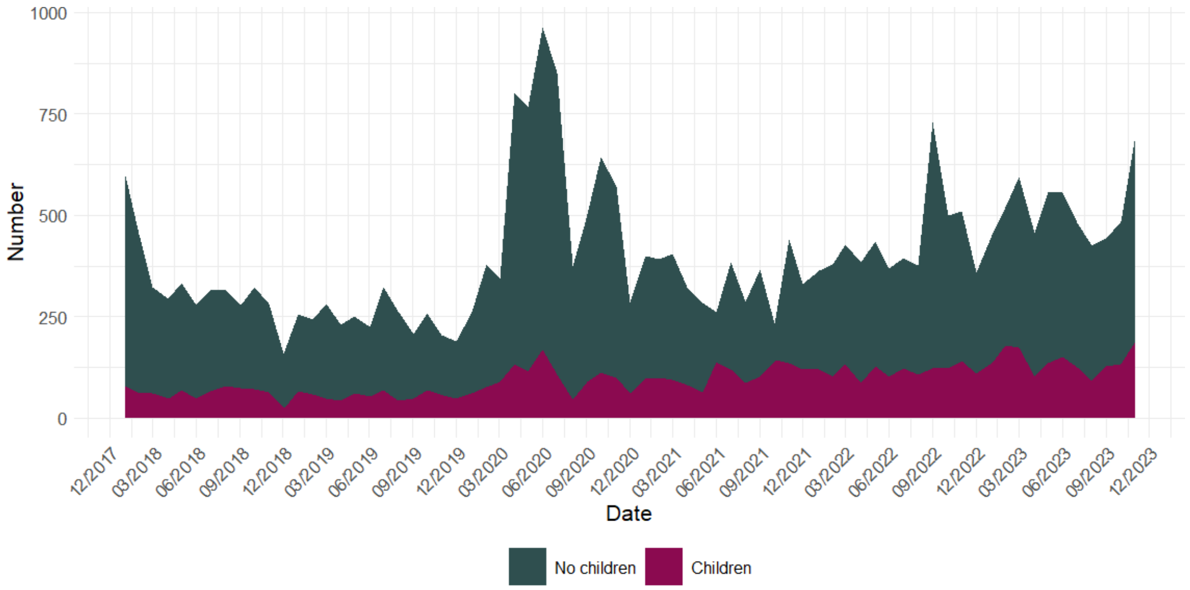
Figure 4. Monthly number of clients by intervention type



Source:CAL

There has been a marked increase in the proportion of people from households with dependent children. This is important, as the benefits of income maximisation may be particularly important for children living in poverty~~.~~ (see Figure 5).

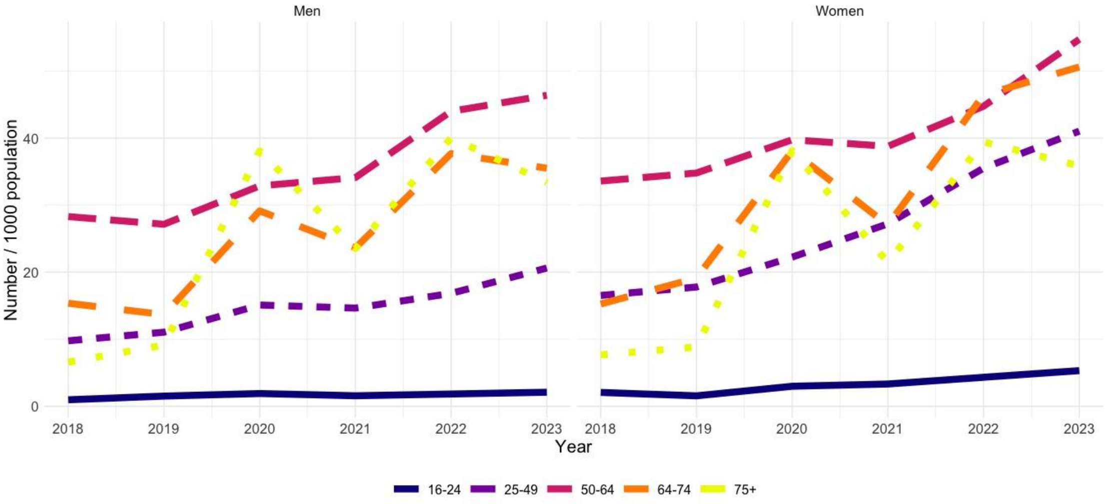
Figure 5: Monthly number of clients from households with and without dependant children



Source:CAL

Figure 6 shows the rate of service uptake per 1000 population each year by age group and sex. The 50 to 65 year-olds age group was the most likely to use the service, although service use by older people (aged over 65) increased during and since the pandemic. The peak in the older age group during the pandemic reflects the targeted support that was provided to groups identified as vulnerable and on the shielding list. Use of the service by 25 to 50 year-olds has also increased, most markedly in women. This is important because women are generally poorer than men and more likely to have been adversely impacted by the cumulative impact of welfare changes since 2010. Women account for 65 percent of those hit by the Under Occupation Penalty and 60 percent of those affected by a cut in Council Tax Support.[57] Because of this, the service has actively sought to increase referrals for mothers with young children, particularly across the perinatal pathway.

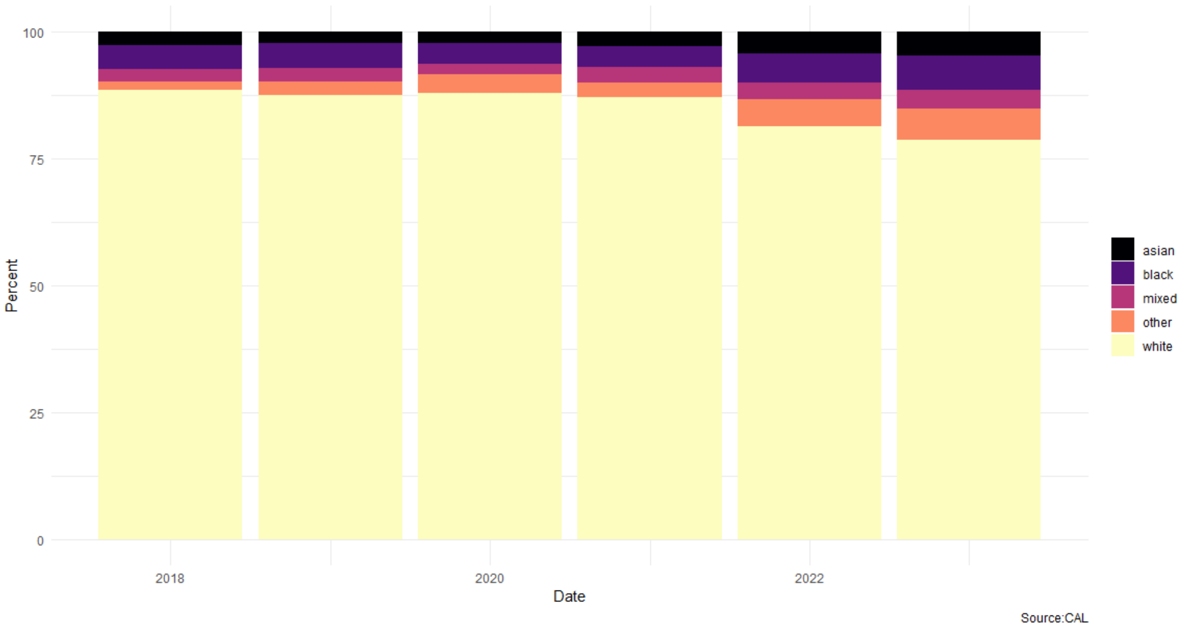
Figure 6: Number of clients per 1000 population by age and sex.



Source:CAL

There has also been a marked increase over time in the proportion of clients from Black, Asian and Minority Ethnic groups (see Figure 7).

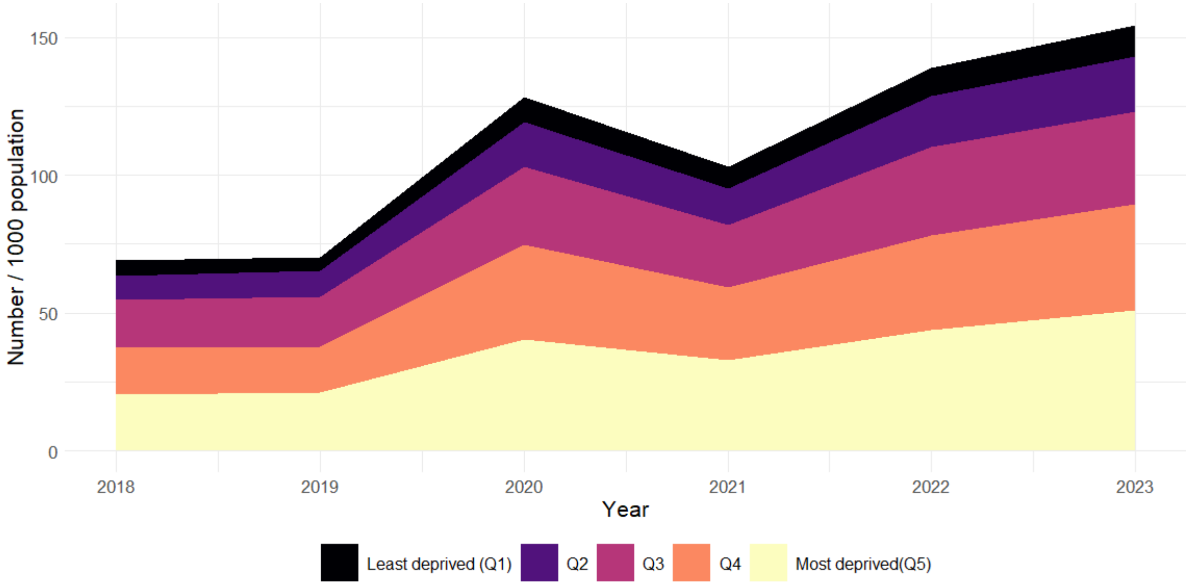
Figure 7: Proportions of clients per year by ethnicity



Source:CAL

Figure 8 shows service uptake by deprivation level. Uptake has increased slightly more in the most deprived populations, with the share of clients coming from the most deprived areas in Liverpool increasing from 30% in 2018 to 33% in 2023.

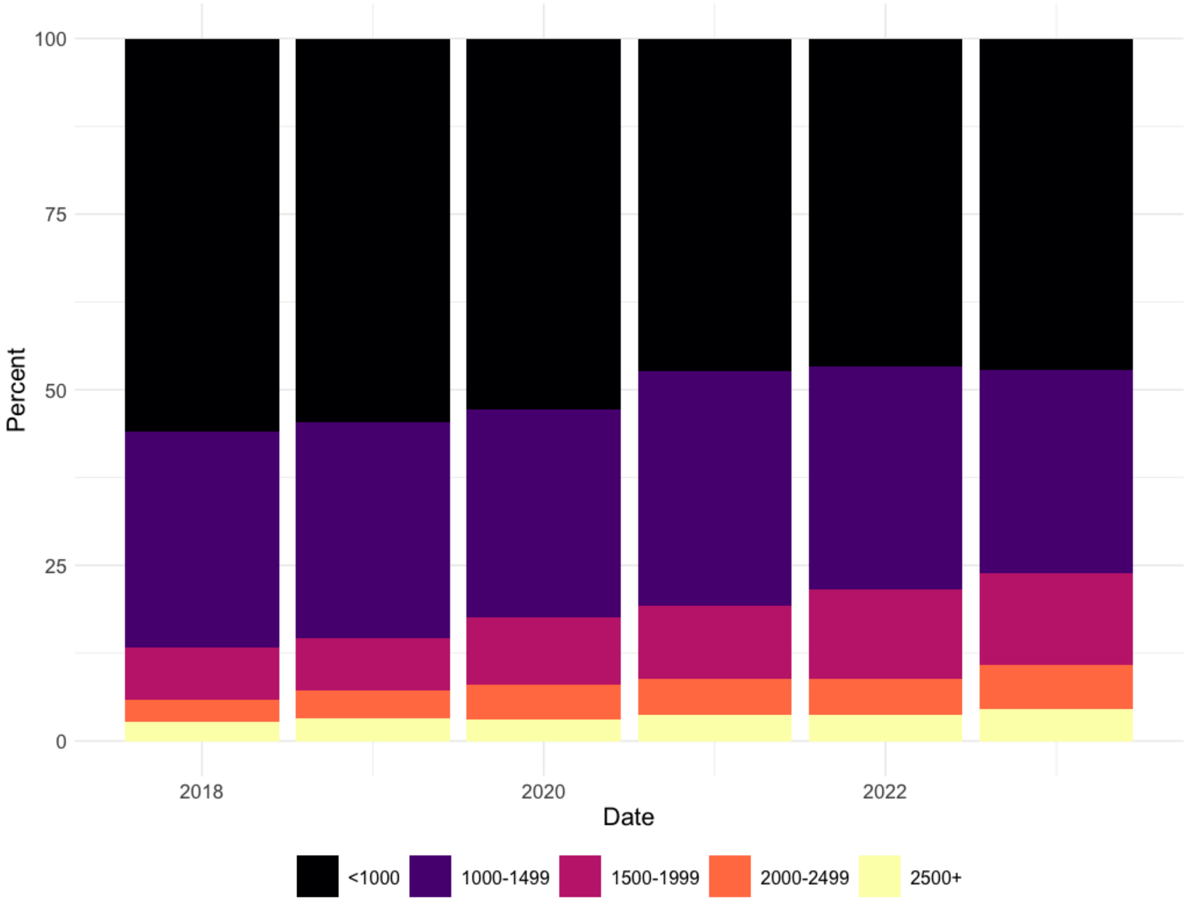
Figure 8: Number of clients per 1000 population by deprivation quintile



Source:CAL

Figure 9 shows service uptake by household income level. These figures are not adjusted for inflation, so the increase in income may not reflect real terms increases. Overall, the majority of households have an income of less than £1000 per month. Whilst it was not possible to estimate poverty rates accurately, due to insufficient information on household size and exact income, we estimate that at least 70% of clients were below the poverty line, with 70% reporting household income of less than £1300 per month, which was the poverty line in 2018 (60% below median equivalized household income of all households in the UK).

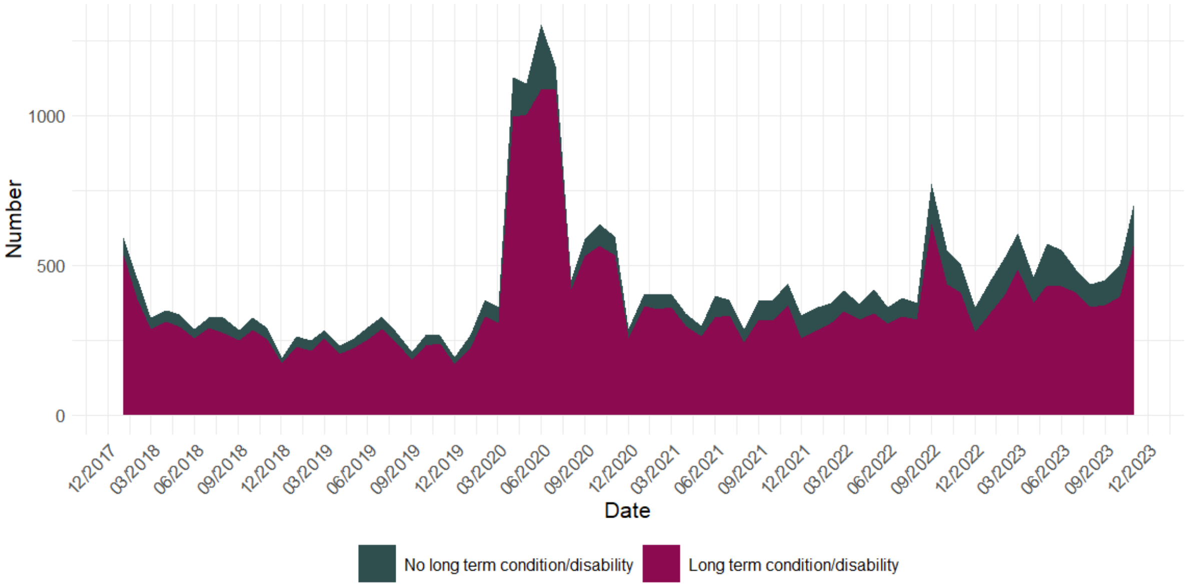
Figure 9: Proportion of clients by monthly household income



Source:CAL

A large majority of all clients (90%) using the service report having a long term mental or physical health condition or disability. Although this proportion decreases slightly to 88% in 2022, there was a large increase in the absolute numbers of people with long term conditions accessing the service (see Figure 10).

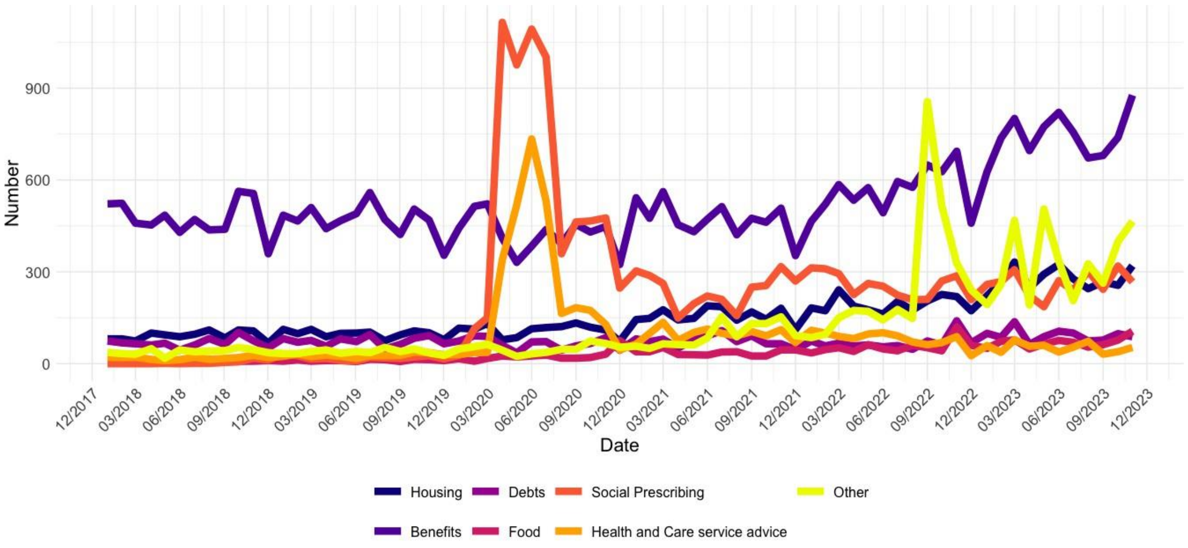
Figure 10: Monthly referrals by long-term condition and disability status



Source:CAL

Figure 11 shows the numbers of cases presenting for a selection of issues. The majority of cases are provided with support with benefits or tax credits. During the pandemic there was a marked increase in clients provided with social prescribing support to access other community activities. There has been a steady increase in the number seeking housing related advice since the pandemic. There has only been a relatively small number of cases recorded as seeking support for food related issues, although this has been increasing. This, however, may reflect a lack of coding of this issue on the casebook system rather than necessarily a low number of people being offered or needing food-related support. The increases in “other” support in 2023 reflects support through the household support fund introduced during this period to help with the cost-of-living crisis.

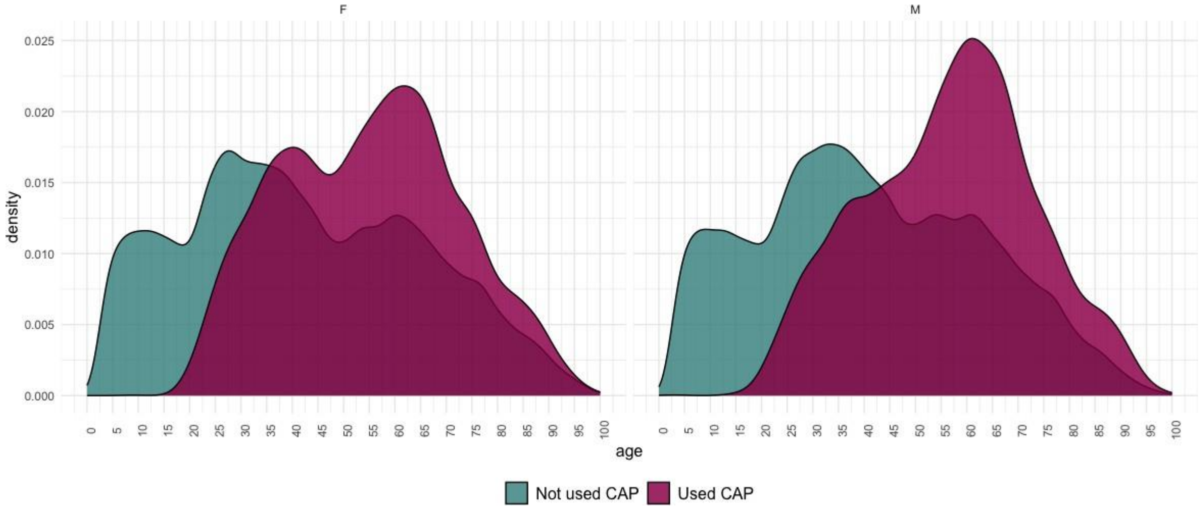
Figure 11: Number of cases by type of issues



Source:CAL

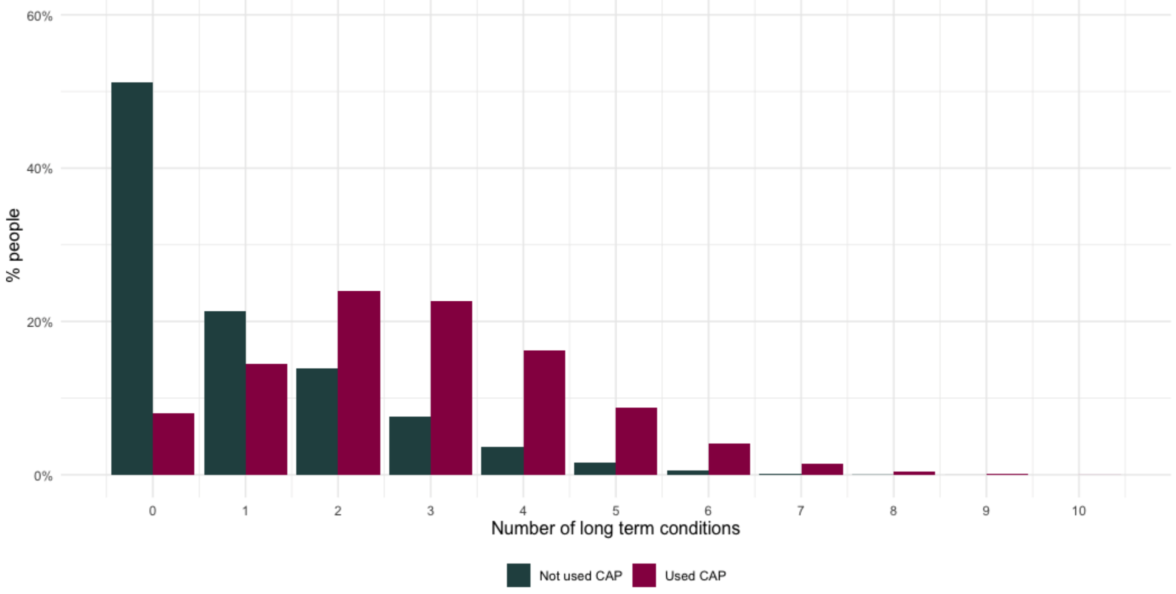
__*Analysis of health profile based on linked NHS and Citizens Advice Case management data.*__ Figure 12 shows the age distribution of CAL clients compared to the rest of Liverpool. The CAL clients between 2018 and 2023, tend to be older than the Liverpool population as a whole, with the age distribution peaking at 65, with second lower peak amongst women around the age of 34, reflecting the targeting of women on the perinatal pathway and families with children.

Figure 12. Age distribution of CAP clients compared to the rest of Liverpool.



CAP clients are much more likely to have diagnosed long-term conditions than the rest of the population (see Figure 13). 78% of CAL clients have more than 1 condition, with 54% having more than 2 conditions.

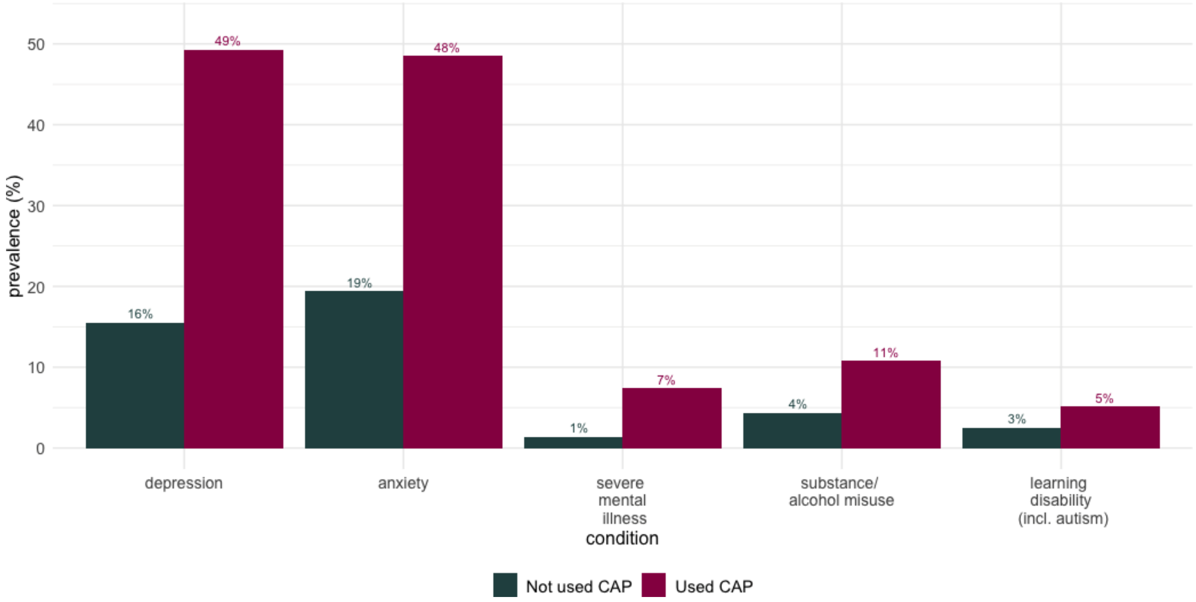
Figure 13.Number of selected health conditions of CAP clients compared to the rest of the Liverpool population



Count of following conditions:cancer, asthma, CKD,Liver Disease,COPD,CVD, depression, anxiety, rheumatological,dementia, diabetes, epilepsy, neurological, Severe Mental Illness

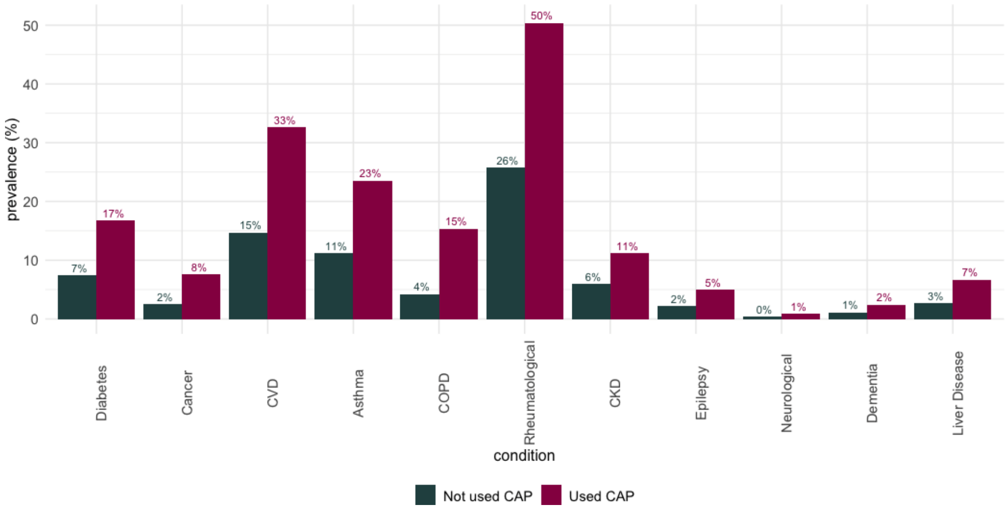
Nearly half of CAL clients have a diagnosis of depression and a similar proportion have a diagnosis of anxiety (60% have either diagnosis). A relatively high proportion have severe mental health conditions, substance misuse problems and learning disabilities relative to the rest of the Liverpool population (see figure 14)

Figure 14. Prevalence of mental health conditions and learning disabilities in CAP clients compared to the rest of the Liverpool population



For all physical health conditions, we investigated, the prevalence was markedly higher in the CAP clients compared to the rest of the population (see figure 15).

Figure 15. Prevalence of physical health conditions in CAP clients compared to the rest of the Liverpool population



3.4.1 Change in self-reported outcomes.

Table 2 shows the change in each of the self-reported outcomes at 2 and 6 months follow up based on regression analysis accounting for selective loss to follow up at each stage, using inverse probability of response weights. Based on these estimates the overall EQ5D index declined slightly over time, although this was not statistically significant. This was largely due to a decline in the physical measures of health-related quality of life. Overall wellbeing improved with an estimated increase in SWEMWBS score of 0.95 (95% CI 0.34 to 1.55) at 2 months follow up. Clients self-rated health also improved by 3 points at 2 months and 6 points (95% CI 4 to 8) at 6 months. Whilst the overall EQ5D index deteriorated slightly, the proportion reporting they were severely or extremely anxious or depressed on this questionnaire declined markedly by 7 percentage points by 6 months of follow up (from around 40% reporting they were severely or extremely anxious or depressed at baseline).

Table 2. Change self-reported outcomes compared to baseline (assessment)

Outcome	2 months (95% CI)			6 months (95% CI)		
Change in EQ5D index	-0.01	(0.001	-0.03)	-0.01	(-0.04	0.02)
Change in SWEMWBS	0.95	(0.34	1.55)			
Change in Self-Reported Health (VAS)	3.27	(1.79	4.75)	5.98	(3.68	8.28)
Percentage point change in proportion severely or extremely anxious or depressed	-4.31	(-1.52	-7.11)	-7.28	(-2.98	-11.59)

Figure 16 shows the estimates of the change in the EQ5D index by referral pathway and whether clients had a welfare issue recorded or not. The declines in EQ5D are most noticeable for people who did not receive support for a welfare related issue and were referred through primary care or the perinatal pathway. This maybe because these groups tended to have a slightly higher prevalence of physical health conditions (see appendix 2). We found no evidence of any differences in change in EQ5D between groups defined by age, gender, ethnicity or deprivation (see appendix 2)

Figure 16. Change EQ5D index compared to baseline (assessment), by referral pathway and whether clients had a welfare issue recorded or not.

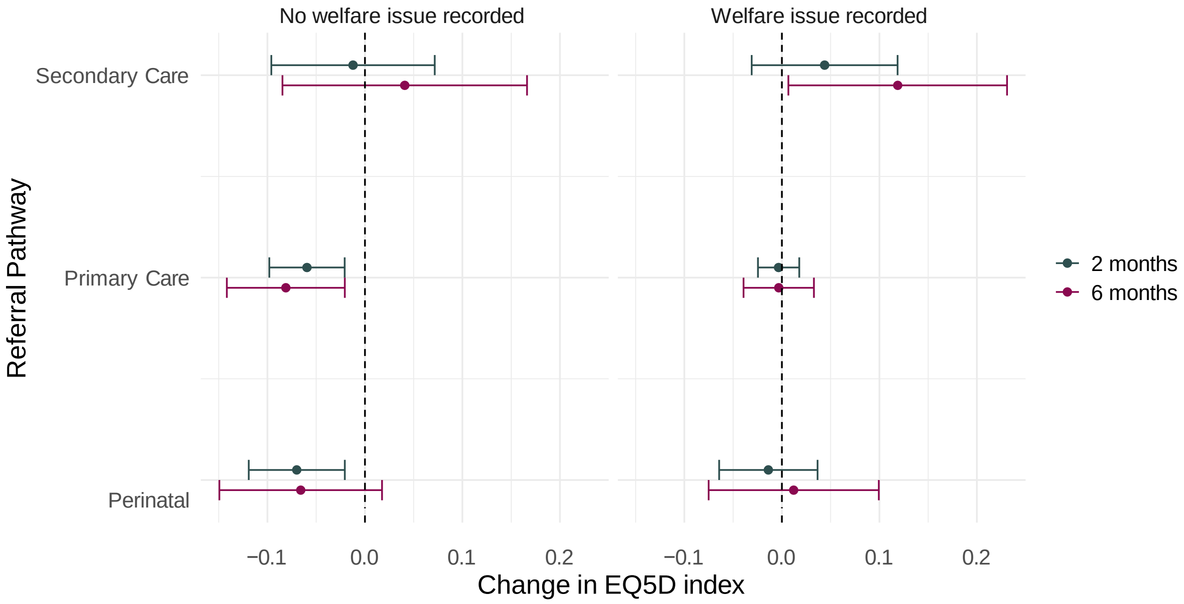


Figure 17 shows the change in SWEMWBS score at 2 months by referral pathway and whether clients had a welfare issue recorded or not. Increases in wellbeing were greatest amongst those who had received support or advice on specific welfare issues. There was no noticeable increase in wellbeing amongst those where no welfare issue was recorded. Once accounting for this, we see no differences between referral pathways, with respect to changes in wellbeing following the intervention. We found no evidence of any differences in change in SWEMWBS score between groups defined by age, gender, ethnicity or deprivation (see appendix 2).

Figure 17. Change SWEMWBS score compared to baseline (assessment), by referral pathway and whether clients had a welfare issue recorded or not.

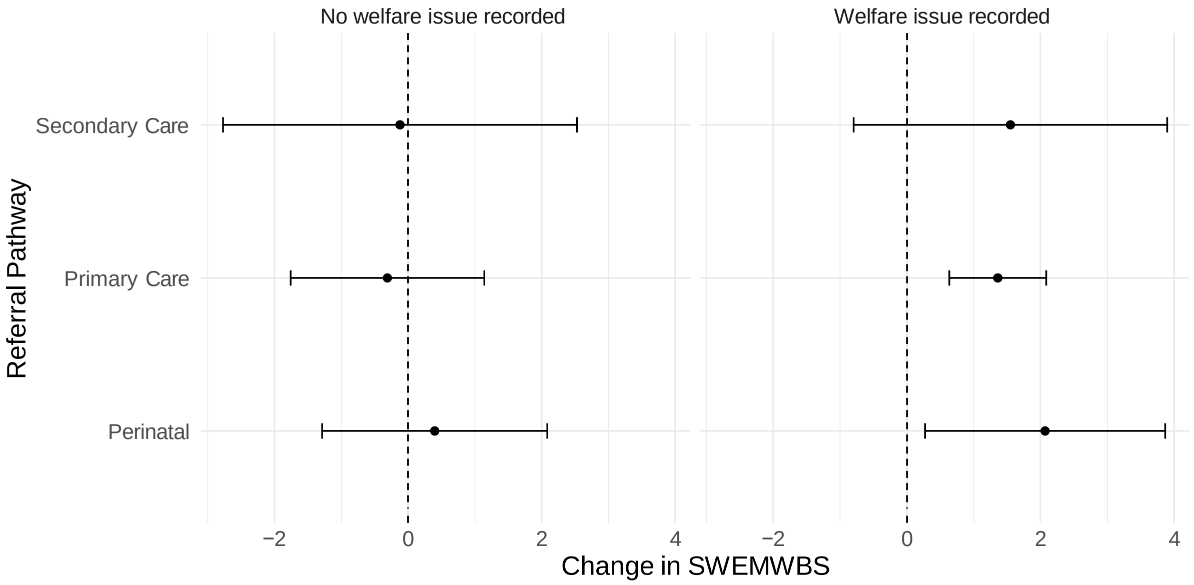


Figure 18 shows the change in self-reported health by referral pathway and whether clients had a welfare issue recorded or not. All groups reported an improvement by 6 months of follow up. This tended to be greater for those with welfare issues addressed. We found no evidence of any differences in change in self-reported health between groups defined by age, gender, ethnicity or deprivation (see appendix 2)

Figure 18. Change self-reported health based on EQ5D Visual Analogue Scale (0-100) at 2 and 6 months follow up compared to baseline (assessment), by referral pathway and whether clients had a welfare issue recorded or not.

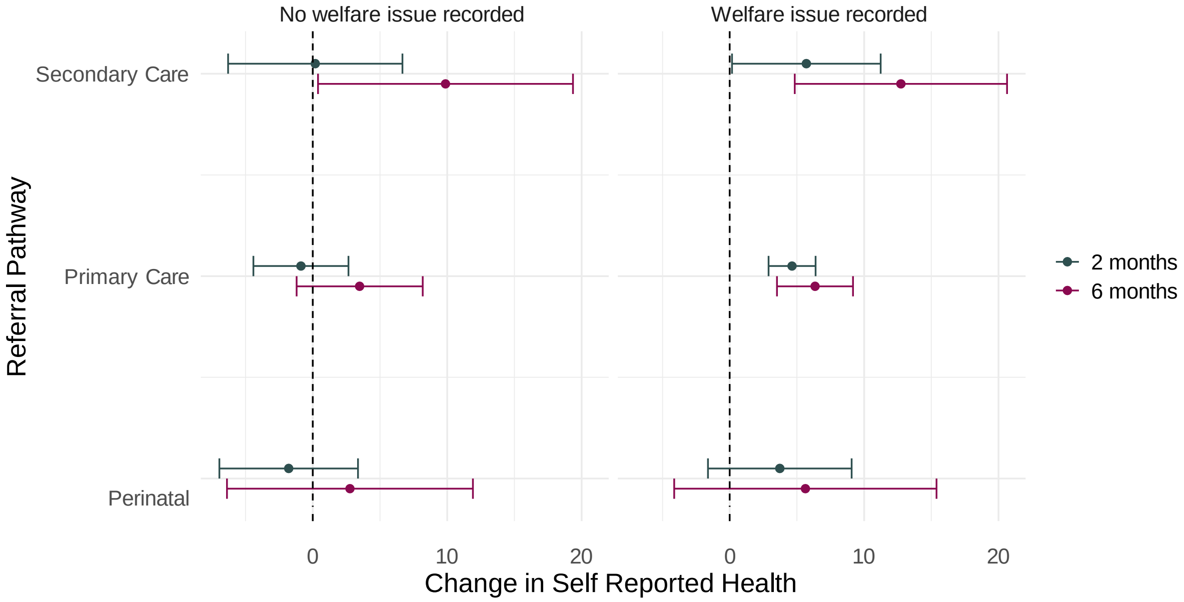
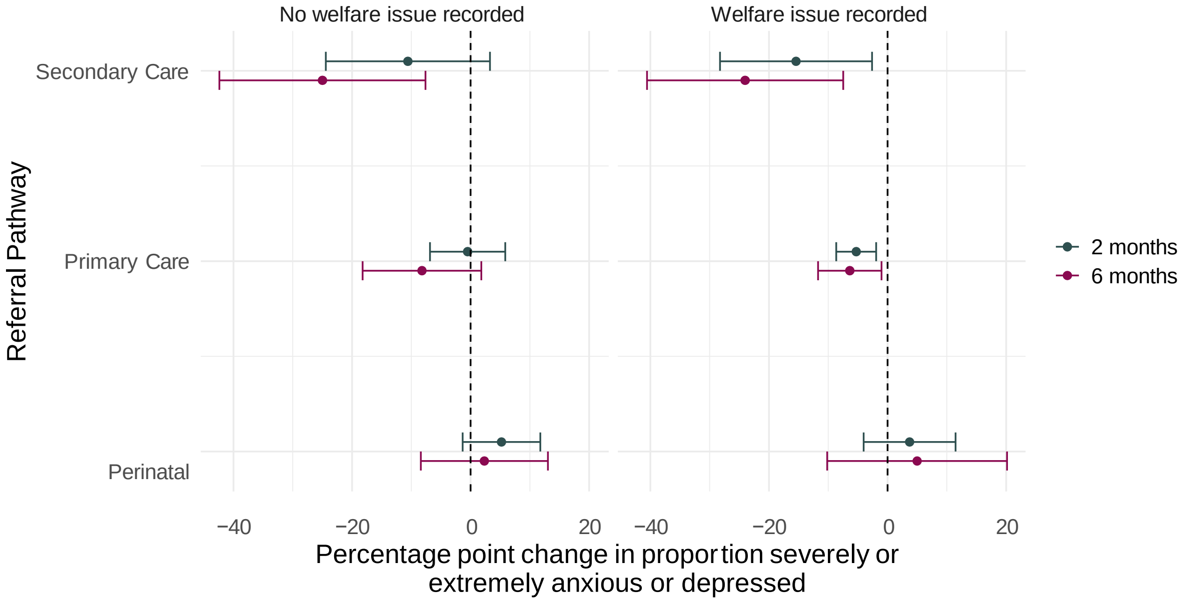


Figure 19 shows the change in the proportion of people reporting that they were severely or extremely anxious or depressed by referral pathway and whether clients had a welfare issue recorded or not. Similarly to other measures, improvements are greatest for those with a welfare issue addressed, with reductions in depression/ anxiety greatest for those referred through primary and secondary care. For those referred through the perinatal pathway there was a slight increase in the proportions reporting that they were severely or extremely anxious or depressed, following the intervention, although this was not statistically significant at the 5% level. This, of course, is probably not related to the intervention itself, and may for example relate to increased stress following childbirth, particularly for mothers living in challenging circumstances. We found no evidence of any differences in change in anxiety/depression score between groups defined by age, gender, ethnicity or deprivation (see appendix 1).

Figure 19. Change the proportion of people reporting that they were severely or extremely anxious or depressed at 2 and 6 months follow up compared to baseline (assessment), by referral pathway and whether clients had a welfare issue recorded or not.



3.4.1 Instrumental variable estimate of the impact of the W2W intervention on household health care utilisation outcomes.

A total of 444,896 individuals made up the study population for the instrumental variable analysis, 20,773 of whom were members of households that received CAP support between 2021 and 2023. Figure 20, shows the trend for each of the four outcomes in the year before and after receipt of CAP, compared to the trend in the rest of the population. Consistently across the four outcomes the trend rapidly increased leading up to the point CAP users received support, showing a declining trend in outcomes during the months following the intervention. This potentially reflects the receipt of support at a point of crisis, probably precipitated by an adverse event. It is also likely partly due to the way the service is designed, being accessible only by referral from health services, those who attend more health appointments will have more opportunities to be referred.

Figure 20: Outcomes before and after the CAP intervention

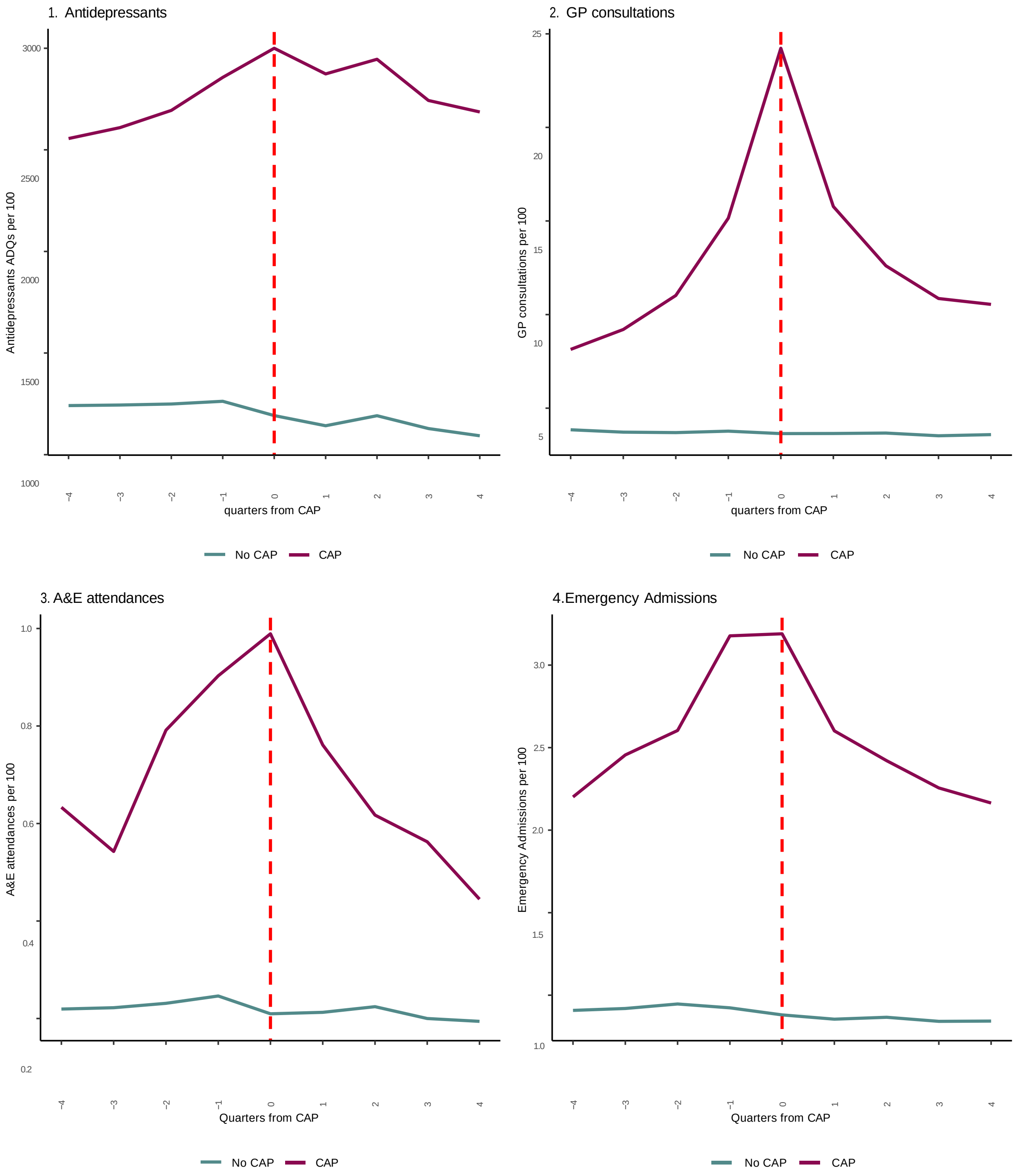


Table 3 shows the estimated impact of first CAP receipt in 2021-2023 on each of our four outcomes, from the instrumental variable analysis, for members of households receiving CAP. The intervention was associated with a reduction in all four of the outcomes, suggesting improved mental health compared to not receiving support. These were statistically significant at the 5% level for all outcomes apart from emergency admissions. This suggests that the decline in these outcomes following intervention was greater than it would have been in the absence of the intervention.

Table 3. Estimated effect of the CAP intervention on 4 mental health related outcomes per person per quarter based on 2 stage least squares instrumental variable regression, for individuals receiving CAP and all household members receiving CAP.

Outcome		95% CI		
Effect on household member receiving CAP	**Estimate**	**Lower**	**Upper**	**P value**
Anti-depressants	-15.21	-29.16	-1.26	0.03
MH GP consultations	-0.19	-0.31	-0.07	<0.001
MH A&E attendances	-0.02	-0.04	0.00	0.01
MH emergency admission	-0.01	-0.05	0.03	0.59

3.4.2 The experience of service-users and stakeholders

Findings from service user interviews

Interviews with service users highlighted how the CAP intervention 'works' from the perspective of the user, potentially leading to improvements in mental health and wellbeing. These highlight the multiple pathways and potential synergies from different forms of support.

Service-users' narratives most often began with a disruption or crisis, usually a stressful event, situation or accumulation of stresses that caused them to feel distressed, sometimes to the point of seeking help for mental health difficulties. These disruptions included becoming ill and unable to work, new caring responsibilities, unmanageable debt or mistakes by utility companies, landlords, etc. Others described a need to address ongoing financial issues, rather than a crisis. Some had accepted living in hardship, not realising that is might be possible to improve their situation, while others felt their financial situation was not yet urgent (for example, because they had some savings to fall back on).

Health and social challenges often interacted. A common experience being poor health leading to loss of work, that exacerbated financial worries, further worsening their health. Recent experience of loss or trauma was also a frequent theme; including loss of health and role, bereavement, and being a victim of domestic violence; as were ongoing stressful circumstances, including long-term caring responsibilities and asylum-seeker status. Anxiety about money was often compounded by the experience of applying for welfare benefits or trying to relieve debt problems. Interaction with the welfare benefits system was experienced as particularly stressful, as well as something that consumed a lot of time and energy. Application forms for Personal Independence Payment (PIP), for example, were described as overwhelmingly complex. Participants experiencing low energy or concentration (for example, those with long covid) found completing the forms physically impossible; others feared making a mistake or had already submitted an unsuccessful application and were unsure how to appeal.

Most participants had not independently sought welfare advice before accessing CAP. Most felt they did not have the capacity, describing how they were too physically unwell, mentally distressed, or overwhelmed to contemplate it. Some felt shame at their situation, believing they should be able to sort things out by themselves, or felt they were undeserving of help. Others perceived open-access advice services to be inaccessible to them (for example, because local Citizens Advice offices had closed), or did not realise that that situation could be changed, and so had not considered seeking help. A few had sought help for themselves and had been unsuccessful due to poor accessibility of open-access services, including long waits for telephone access.

The point in all participants' narrative where things began to change for the better was the point at which they had a conversation about their situation or worries to a health professional, who subsequently referred them to CAP. Most often, it had been the health professional who had started the conversation, asking a pertinent question in a sensitive and direct way. All described feeling comfortable having that conversation, although some were surprised to be asked these questions in a healthcare setting.

There was a consistent theme that these initial conversations and referrals had a positive impact in themselves. Just knowing that such as service existed was experienced as validating, and the referral brought some hope of positive change. All of the interview participants had heard of Citizens Advice and understood the type of help that they might be able to offer.

Participants all reported that Citizens Advice had phoned them for an initial assessment within one or two days (as the service is designed and commissioned to do). They viewed this as important in enabling to engage with the service, stating that they might have been hesitant to make a telephone call themselves and might have lost hope or decided against engaging if they had had to wait longer.

The initial call was experienced as supportive, providing further validation, hope, and reassurance. Participants felt that somebody was listening to them, took them seriously, and was willing to support them in the way they needed. This was especially beneficial for participants who had been experiencing stressful circumstances without support for some time. A few had been slightly nervous or sceptical about their referral and felt relieved or pleasantly surprised after the phone call. Some were obtained direct financial help at the initial assessment, for example a fuel voucher, which provided some immediate relief from the immediate crisis.

Around two weeks after the initial assessment, participants had one or more appointments with a CAP advisor to support them with the particular issues they had. This support was experienced as positive, whatever the outcome, because it relieved them of the burden of things they needed to find out about and tasks they needed to complete. *'It took a load off my shoulders'.* Participants described how Citizens Advice staff had completed complicated application forms (e.g. for ESA, PIP or Property Pool) on their behalf, as they had been unable to do this themselves (due to health problems, anxiety, lack of confidence or language issues). Just being able to understand their situation better and learn what might be available to them was experienced as helpful.

"I don't know how people cope (with having to apply for PIP). I couldn't have coped without Citizens Advice"

Female aged 55-65, unable to work due to a long-term health condition

"I think the most useful part was explaining, you know, what I actually can get on benefits for the condition I've got … I felt slightly better"

Male aged 55 to 65, currently on sick leave from his job

Participants also experienced the process as emotionally supportive and attributed this to the friendly and caring way the advisers interacted with them. Some contrasted this with their interactions with other organisations; CAP advisers were described as 'normal people' who 'would laugh' (unlike some NHS staff); and who would 'believe you' and 'take your side' (unlike staff operating the welfare benefits system). CAP staff were reported to be polite, friendly and reliable, and this contributed to making the participants feel that they mattered. One participant likened the way CAP routinely treated people to the good customer service she received on the phone to her internet and TV company, which had also 'made my day'.

Participants particularly valued the fact that CAP staff kept in touch, usually by telephoning or texting after an agreed length of time to enquire about progress and ask how they were. This gave participants a feeling of being kept in mind and kept open channels of communication that would enable them to easily access further help if needed. Some participants also received follow-up from the person who had referred them, such as a primary care social prescribing link worker, which they also experienced as supportive.

The practical help and advice provided by CAP often led to positive material changes, including access to welfare benefits, reduced debt repayments, hardship payments, or a new home. Most participants who had reached this point in their journey found themselves either having more money to live on, or greater financial security for the future. Participants reported this extra money enabled them (or would enable them) to improve their physical living conditions (for example, by putting the heating on), to participate more fully in social and family life (for example, providing treats for grandchildren), retain their mobility after becoming disabled (for example, by running a car), or to participate in physical or cultural activities, such as swimming and yoga. The extra money relieved anxiety associated with not having enough, and enabled participants to achieve a standard of living where they could 'live' and enjoy life, rather than just 'exist'. Many described how they had a little more money to spend on their extended family.

__"….__they reckon I'm going to get 120 pounds about a month more, so at least I can put the heating on a bit more when I need to, you know, instead of sitting round in jamas and dressing gown... that was going to be my way of getting through, you know... get a blanket, wrap myself up and then, you know, try and save what I can"

Female, aged 55-65, unable to work due to mental and physical health problems

"… I buy (my little sister) sweets a lot more… she's 20 and disabled, she has some sort of syndrome so she'll be like a child for the rest of her life… I help my mum out a lot more, because she looks after my little sister"

Male, aged 30 to 45, not working due to mental health problems

A few participants found that Citizens Advice could not help them with their presenting problems, or that they were not entitled to additional welfare benefits. However, they valued the input they had received, because they felt that they 'had tried everything' and had acquired the language or confidence they needed to help themselves. Two participants reported that they had gone on to solve problems by themselves; negotiating affordable repayments on utility bill arrears and successfully appealing a benefits decision.

Some participants, having come to CAP with a particular problem, reported that CAP helped them in other ways. They built a trusting relationship with CAP staff, who conducted continuous holistic assessments, asking them about how they were feeling and any other worries they had. As a result of this relationship, they were able to address other concerns or to receive help with things they would never have considered, including giving access to fuel voucher scheme, free bus passes, free swimming to help with recovery from illness, and activities for children during the school holidays.

Some participants had also been referred to and used other non-medical services to support their wellbeing. This reflected a complex network of referral flows between different voluntary groups and organisations, with participants being referred into CAP from other organisations, from CAP to other organisations, and between other organisations. Most commonly, they had continuing or previous contact with a linkworker (accessed either through CAP or their GP); others had attended a community mental health hub called Life Rooms; and a few had accessed more specialist support, including anxiety management courses and support to escape domestic abuse, or community activities such as yoga classes or music projects. Participants also received referrals to and from NHS Talking Therapies and Children's Centres. Participants described how accessing one non-medical service enabled them to be referred to and access others; all of which (with the exception, at times, of NHS Talking Therapies) had a positive impact on their circumstances or wellbeing. Participants accessed different services at different times in their journey (before, after, or alongside CAP), depending on when opportunities presented and on their changing priorities over time. Primary care linkworkers were particularly highly valued and were described in a similar way to CAP staff as people who listened, took an interest, were caring and helpful, and checked in with them at regular intervals.

Once participants' finances or living situation had stabilised, and they no longer felt themselves to be in 'crisis', they often found they had the 'headspace' to focus more on managing a long-term health condition, improving their mental health and wellbeing, or taking up new opportunities. This included three who had been able to take up occasional paid work, one who was looking into registering for an Open University course, and one who was engaging in various social and cultural activities in the community. Some also described how relationships with family, including young children, had improved now they were feeling less stressed. Some had been able to use their experiences to help support friends and family, for example, one had helped a family member to access a drop-in Citizens Advice service for assist him with problems he was having at work.

While most participants engaged with Citizens Advice for help with a specific problem and then moved on, a small number continually re-engaged, using the direct phone line given to all CAP clients. This group were living with both health and circumstantial vulnerabilities (for example, mental health conditions, insecure housing, refugee status, caring responsibilities). and experienced frequent financial and other practical difficulties. For these participants, CAP was seen as a 'lifeline', and one expressed concern over what she would do if the service closed down. Many participants who had not felt the need to re-engage also felt reassured that they could re-engage if they needed, describing it as *"they've got my back",*

Reflecting on their experience, almost all participants described their experience of CAP in positive terms. The only exception was a participant with an immigration problem, who was unable access relevant advice through the service and therefore found it unhelpful. The impact of CAP was different for different people, ranging from just putting their mind at ease about a specific issue, to improving their financial situation, to helping them to recover from a health and social 'crisis', to providing ongoing support to help keep them well and prevent future crises. Some participants described CAP as 'better than friends and family', because friends and family had their own problems and might eventually get bored of listening and helping. Some perceived the benefit to be quite extreme; one thought she would probably have been admitted to hospital, and her son put into foster care, if it wasn't for the support she received.

Findings from the perinatal focus group

Women participating in the perinatal focus group identified a trusted relationship with a midwife or health visitor as a key supporting factor to accessing services. They were clear that women will share difficulties they are experiencing if they trust the practitioner and are confident the practitioner can offer solutions. Focus group participants also identified barriers to women in their position accessing mainstream services in the perinatal period. Women living in vulnerable circumstances are hindered by having low awareness of services and hesitation to self-refer. Women described fear or lack of trust of authorities and unwanted state intervention in family life impeding problem sharing with health and care professionals. These factors could lead to delayed help seeking and an escalation of difficulties. Citizens Advice was seen as more independent and therefore more likely to be trusted than statutory services.

Women who had accessed the service in the perinatal period felt '*relieved*' and found LCAP staff friendly & non-judgmental. The ongoing support offered was viewed as a '*godsend*' and advisers portrayed as '*guardian angels*'. Perinatal service users explained that new motherhood is "*uniquely isolating"* and "*a time when you are at your most vulnerable".* LCAP was viewed as filling a gap in service provision by offering a vitally needed tailored service in the perinatal period.

Findings from interviews with stakeholders involved in the perinatal pathway.

Interviews with stakeholders revealed that although it had taken some time for the service to become embedded, there was increased awareness of CAP among health and care colleagues. This was described as involving ongoing intensive work to build and maintain relationships. They described a series of initiatives to support referrals into the perinatal service, which included an outreach programme to maternity services, Children's Centres and the Children's Hospital, to strengthen partnerships, promote the service and train staff. The CAP team regarded relationship-building as a continuous process to maintain, broaden and deepen engagement to ensure sustainability. Collaborative working between the Integrated Care Board, Citizens Advice Liverpool and the Maternity Hospital, led to the establishment of a Non-English Speaking Team clinic in response to national evidence of poorer maternal health outcomes for women from ethnic minority backgrounds.

Adapting and diversifying the programme beyond health professionals was seen as important for increasing uptake by establishing and expanding the number of trusted partners able to refer directly to LCAP, including for example Children’s Centres staff and Parent Champions.

An important component highlighted by people referring into the service was the simplicity of the referral process and lack of restrictive referral criteria, meaning that busy clinicians could just pick up a phone. Referring health and care professionals and women accessing LCAP in the perinatal period, felt that the existence of the service helped women externalize problems they had previously internalized, thereby reducing feelings of self-blame and shame. The presence of a specialist welfare service legitimized the struggles women experienced in the face of debt, housing, low income and poor mental health related to financial and social stress factors and served to lessen the perceived stigma and sense of individual failure.

‘One thing is […] feeling validated. Is Mum – are parents – feeling that it’s ok to worry about these practical things because the fact that there’s a service for it means that other people are struggling with the same thing and you know it’s a recognised need.’

The presence of CAP was also felt to legitimize conversations by health professionals with families about socioeconomic circumstances. Whereas previously some might have avoided this topic, as they were unsure what help they could give in response. The establishment of the perinatal pathway into CAP also freed up health professionals time to focus on their area of expertise.

‘Staff on the ground [are] reporting they’re able to pass things over, whereas [previously] a lot of health visitors would have done a lot of the [housing and finances] work that [CAP] are doing now. They’d be trying to refer to different teams. So, it’s good to have that one agency that we can refer into that will […] coordinate everything for us and then feed back.’

Making enquiries had previously verged on unethical:

‘To ask somebody to talk about a problem and then say, ‘Oh well, we can’t do anything about that’.’

There were indications of a gradual cultural shift away from a medical to a social model of health both at an individual level and across professional roles, teams and services. Stakeholders talked about it becoming more routine to identify families struggling financially and found that the presence of CAP helped them develop the language and confidence to talk to families about their social and welfare needs.

‘L~~l~~ooking at experience of economic oppression […] these aren’t […] extras that we do […] once we’ve sorted everything else out. Actually they’re […] key, they’re fundamental. […] That’s definitely sharpened my thinking [..] that’s changed that as a priority for me’.

Whilst several participants felt there was a shift to regarding the Social Determinants of Health (SDH) *as everybody’s business*, others highlighted ongoing barriers. These included, a fear of opening the floodgates to unmet need, reluctance to assess needs that cannot be met and not wanting to stray beyond specialisms. Some health and care professionals still lacked the confidence to address the SDH. For others, short term clinical targets competed with the knowledge that addressing the SDH has greater impact on health over the long term.

3.4.1 Economic evaluation

3.4.1.1 Calculating the social return on investment

On average, amongst people who had responded at both assessment and follow up the change in SWEMWBS scores increased by 0.8 points (SD=5.9). Only primary care and secondary referrals reported a change from baseline to follow-up (with an increase of 0.9 and 1.5, respectively), with perinatal referrals reporting no change (0.0).

Total CAP service costs for 2022-23 were £1,254,417 with the majority (89%) covering staff costs. Overhead costs of £126,646 (10%), included office costs, as well as room hire in GP surgeries (£10,800) to provide the CAP service in primary care locations. Also included were community partner payments (£29,600), a nominal support payment to the top 5 social prescribing services referred to by CAP link workers each month. Data administration and evaluation costs made up £10,840 (1%) of service costs. These were ongoing costs and did not include any additional costs for the CAP trial evaluation.

During the period April 22 to March 2023, there were 8,438 unique CAP service users. The average service cost per service user was calculated by dividing total costs for the 2022/2023 financial year by number of service users, to give an average service cost per service user of £148.66.

Table 4 shows the estimated change in social value and return on investment. There was an estimated positive change in social value (of £697 per person) reported for the overall service, which was driven by primary care and secondary care referrals (£702 and £1,802, per person respectively). Respondents from perinatal referrals reported a marginal social value change (gain of £133.73 per person). SROI ratios were then calculated by dividing the average change in social value per person by the average service cost per person. The overall service gave a positive SROI return of £1:£4.69, which was due to the positive SROI returns from primary (£1:£4.7) and secondary (£1:£12.1) referrals. In comparison, perinatal referrals reporting a return on investment of just under 1 (£1:£0.90).

Table 4. Change in social value and SROI ratios for the CAP service

Referral pathway	Service users (n=)	Sum SV at baseline	Sum SV at follow up	Change in SV	Change in SV - deadweight (27%)	Average SV change pp	Average service cost pp	SROI ratio
Primary care	443	£6,144,876	£6,570,657	£425,781	£310,820	£701.63	£148.66	£4.72
Secondary care	31	337448	414003	£76,555	£55,885	£1,802.75	£148.66	£12.13
Perinatal	64	£1,378,276	£1,390,000	£11,724	£8,559	£133.73	£148.66	£0.90
Total service	**538**	**£7,860,600**	**£8,374,660**	**£514,060**	**£375,264**	**£697.52**	**£148.66**	**£4.69**

SV= Social Value

Sensitivity analysis: 14 service users provided feedback on the percentage impact (attribution) of the CAP service on their mental *wellbeing.* Participants from primary and secondary care reported a higher level of attribution to CAP (72.5%) compared to perinatal (60.0%). As the number of interviewees (n=14) represented a very small number of SROI respondents (n=538), rather than assuming all service users would report similar levels, attribution was used to provide a sensitivity range for the SROI ratios. A sensitivity range of 72.5-100% gave a positive SROI return of £1:£3.42-4.72 for primary care and £1:£8.79-12.13 for secondary care. Taking part in the CAP service was reported to have negligible impact on any other service or activities that may impact on service users' wellbeing, so no adjustments for displacement were included in the sensitivity analysis.

3.4.1.2 Modelling the net costs and impact on quality adjusted life years.

When investigating the association between the change in EQ5D index, and change in the 4 health care utilisation outcomes outlined above, within the subset of the intervention cohort that had data on all of these outcomes, we find a significant association for anti-depressants (p=0.003) and A&E attendances (p=0.04). In other words, the EQ5D index tended to increase with a reduction in these two outcomes. The coefficients from this model (formula 3, in section 4.3.5.2 above) were then used to model the estimated QALY impact associated with the reduction in A&E attendances and antidepressant prescribing, caused by the intervention, as estimated from the IV model. This gave an estimate of 0.015 QALYs gained per household member (95% 0.009 to 0.036) (see Table 4). The average saving to the NHS resulting from the estimated reduction in prescribing, GP consultations and A&E attendances was estimated to be £91 (95% CI £45 to £106). As outlined above in section 3.4.1.1 the cost of the service per client was £148. Given there were on average 2.7 people in each household, this gives a cost of £55 per household member, which together with estimated savings to the NHS gives a net cost of the service of -£36 (95% -£51 to £10). In other words, the intervention was estimated to be cost saving. Calculating the cost per QALY gives a cost effectiveness ratio of -£3,369 per QALY (95% CI £2,958 to -£3,916).

Table 5. Estimated QALYs gained, cost saving, net costs and cost per QALY for each household member as a result of receiving the CAP intervention. Costs savings only include savings form estimated reductions in antidepressant prescribing, mental health related GP consultations and mental health related A&E attendances. Upper and lower confidence intervals based on 1000 bootstrap replications.

Outcome	**Estimate**	**Lower**	**Upper**
QALY gained	0.015	0.009	0.036
Cost Saving per person (£)	-£91	-£106	-£45
Net Cost per person (£)	-£36	-£51	£10
Cost Effectiveness (£/QALY)	-£3,369	£2,958	-£3,916

3.5 Discussion

The CAP approach provides a practical option for providing social and welfare support accessible through health services for large numbers of people with high health and welfare needs, that is likely to have mental health and wellbeing benefits for patients and result in net cost savings for the NHS. The approach provided access to support to relatively large numbers of people, with an estimated 75,000 people living in households supported by CAP from 2018-2023, with a relatively low cost (£148 per client / £55 per household member). The CAP clients were living with high levels of both socioeconomic and health needs. At least 70% of the cohort were living in poverty, 90% had long term conditions and 78% had multiple conditions. At the point they accessed support through CAP, they had extremely high levels of health care service use.[58]

Following the intervention clients experienced an improvement in self-reported health, a reduction in anxiety and depression and an improvement in mental wellbeing. Overall health related quality of life however remained stable. Mental health and wellbeing and self-reported health tended to improve most for clients that received support/advice for specific welfare issues. There did not seem to be similar improvements in mental health for people referred through the perinatal pathway, compared to other pathways.

Estimating the causal effects of CAP in Liverpool on mental health outcomes indicates that it appears to have led to lower antidepressant prescribing, mental health related A&E attendances and mental health related consultations in primary care. This was supported by qualitative studies with people who had been supported by CAP, some of whom reported being able to reduce use of medication or avoid hospital attendance as a result.

Qualitative interviews with participants highlighted components of the programme that are likely to have contributed to its success. These included the relationship of trust with case workers and the relationship with Citizens Advice Liverpool as a trusted organis~~z~~ation, independent of statutory services. The ease of accessing the service and the combination of practical and emotional support and the potential to re-engage if needed, were important. People involved in providing and referring into the service felt it had helped legitimise conversations about socioeconomic conditions and health, and that service engagement was helped by the simplicity of the referral process. It was recognised that it takes a long time and intensive work to build the and maintain the relationships needed for the ongoing functioning of the service.

Economic evaluation included estimation of the social return on investment (SROI) and cost effectiveness. The measurement of SROI was calculated by quantifying the improvement in wellbeing in monetary terms, i.e. a measurement of the monetary value people ascribe to that level of improvement wellbeing and comparing that to the cost of the programme. The SROI estimate for overall programme, suggested a £4.70 return for each £1 invested. There was some indication that this was lower for the perinatal pathway and higher for the secondary care referral pathway. As highlighted in section 3.4.1 the lower improvements in wellbeing in the perinatal pathway seem to be because a smaller proportion of clients in that pathway had received support for welfare issues (75% versus 90% in other pathways). There are also limitations in using the change in wellbeing from assessment to follow up as a measure of programme impact on wellbeing, the ROI estimates also do not take into account cost savings to the NHS from prevented health care utilization (see below).

When quantifying the costs saved to the NHS based on the estimated reduction in antidepressant prescribing, GP consultation and A&E attendances, we find that these cost savings are greater than the overall costs of the programme. Each household member supported was estimated to save the NHS £36. This would indicate that the programme overall had saved the NHS £2.7 million (95% CI 3.8 million saving to £750,000 net cost), between 2018 and 2023.

Our cost effectiveness analysis modelled the likely quality of life gains that the reduction in health care utilization might represent. Clearly as our main estimate is that the service was cost saving, the cost per QALY is not so relevant, as there is no net cost, but the lower confidence interval around the cost effectiveness ratio, provides a useful lower bound of potential cost effectiveness. The lower 95% confidence of estimated cost effectiveness of £2,958 per QALY therefore indicates that it is very likely the cost effective of the service is greater than this. This is clearly well below the threshold used by NICE of £20,000 to £30,000 to assess whether interventions should be funded on the NHS. We recognize however that the methods used in this study have not followed the standard for estimating incremental cost effectiveness ratios in Health Technology Assessments. Estimates utilizing instrumental variable approaches have estimated that on average for the NHS each QALY costs £13,500.[59] Public health investment tends to be more cost effective and many public health interventions have net cost saving, with each additional QALY estimated to cost about £3800 from the local public health budget in England. [59] For comparison a recent review of the cost effectiveness of public health interventions found the average incremental cost effectiveness ratio for physical activity intervention promoting cycling and walking was £3400 per QALY.[60] The cost per QALY gained from a hip replacement has been estimated to be £7182 per QALY. [61] The estimates here indicate therefore even at the lower bound for the estimate of the programme cost effectiveness, Citizens Advice on Prescription would still be more cost effective than most other NHS or public health investments.

Limitations.

There are several limitations to our study. Firstly, we have relied largely on using routinely collected data both through Citizens Advice Liverpool's case management system and linked NHS data. Whilst this has provided a unique rich source of data for understanding the intervention and its impacts, there are multiple challenges with using data that was not specifically collected for research purposes. Information may not always be recorded consistently within case management systems, particularly when the information is not crucial for service delivery. For example, we had planned for more granular analysis of referral pathways, however this information was not recorded with sufficient consistency to allow for this. Data linkage provides an additional challenge as personal details (e.g. name, address etc.) are not always recorded consistently. Probabilistic matching is one way to address this and enable sensitivity analysis to explore potential biases related to data linkage.[62] The policy of the DSCRO at the time however was to not use probabilistic linkage; they would only use exact matches for specified fields. This meant that there were a relatively large proportion of records for which no match could be found. This could lead to biases, as some of our analysis was only based on a subset of the cohort for whom data could be linked. Our analysis also relied on identifying people in these linked data who lived within the same households. We use anonymized data from unique property reference numbers (UPRN) to do this, essentially identifying people living at the same addresses. There will be people living at the same address who are not in the same household, for example with houses of multiple occupancy. Whilst we excluded records where there were more than 10 people at the same address, it is likely that we will have mis-classified some people as being in the same household, when they were in fact different households. The exercise linking health records to UPRNs was also only completed at one point in time by the NHS in 2018 and therefore we would not have correctly allocated people to households if they moved into new households over time.

A further limitation is that the analysis of outcomes derived from health care utilisation will be affected by inaccuracies in coding of activity and affected by changes in access to health care. Whilst it is reasonable to hypothesise that improvements in the mental health of participants would lead to declines in the four health care utilisation outcomes, it is also possible that interventions such as CAP lead to increases in health care utilisation. For example, if addressing social welfare issues enables people to access health care to address previously unmet needs, then this would lead to increased utilisation even if overall health and quality of life has improved. The findings of the intervention reported here should therefore be seen as a lower bound of the health benefits resulting from the intervention.

We were only able to collect data on self-reported outcomes (EQ5D, SWEMWBS) from people who had received the intervention, as this data was collected by caseworkers at Citizens Advice Liverpool. As there was no control group for these outcomes we were limited to analyzing change of over time in the intervention cohort. This provides very limited, if any, indication of the causal impact of the intervention on these outcomes. There is no particular reason to think that no change in wellbeing over time, as we observe in the perinatal group, for example, ~~–~~indicates a lack of intervention impact, when it's quite possible that wellbeing would have declined in the absence of the intervention. This also limits the conclusions that can be drawn from the estimates of SROI, which are derived from change in SWEMWBS score. Collecting follow up data on self-reported measures is also challenging, with only a fraction of those assessed at baseline providing responses at follow up. Whilst we accounted for some biases relating to this loss to follow up by weighting the data for non-response, response bias will still remain, where it is related to characteristics not accounted for in the response weights.

The study was an evaluation of a natural experiment, in that we aimed to estimate causal effects from observational data. Whilst the instrumental variable approach we used has some strengths, there remains potential for bias. Whilst the instrument used was good predictor of current uptake of the intervention, the underlying assumptions needed for causal inference are untestable.[63] It is still possible that unobserved 'back door'' pathways explain some of the associations observed. Whilst this study indicates potential positive impacts of Citizens Advice on Prescription, conclusively estimating the impact would require a randomised controlled trial.

Limitations of the qualitative research include the selective recruitment of service users and health professionals for interview. Inevitably some groups were easier to recruit than others. For example, it was particularly difficult to recruit women across the perinatal pathway. We sought to address this by holding a focus group for these women instead. The service users recruited were potentially those that had tended to have a more positive experience of the service. Similarly, the stakeholders recruited were probably generally those engaged in the service, whilst groups that were involved in similar interventions, but not particularly engaged in CAP, were underrepresented. The interviews therefore give an insight into the experience of those positively engaged in the service but give less insight into the reason why some services or services users might be less inclined to engage.

We used two approaches to economic evaluation. The SROI estimation was limited by weaknesses in the approach used to estimate the intervention impact on wellbeing as outlined above and did not account for cost savings to the NHS from reduced service use. For the cost effectiveness analysis, we needed to model the change in QALYs implied by our estimates of the effect of the intervention on health care utilisation outcomes. This assumed that within the subsample of the cohort, where we had data on both heath care utilization and EQ5D index, these associations within individuals reflected the extent to which reductions in the mental health related utilization reflected improvements in quality of life. Clearly effects in the other direction are also plausible, i.e increased health care utilization could improve health related quality of life. This however would have meant that are estimates are conservative. Within the economic evaluation we have also only taken into account direct costs to Citizens Advice Liverpool, whilst there are also potentially costs of providing the service amongst referring services that weren't accounted for. Additional costs could also be incurred by other services that CAP referred onto.

Conclusion.

This study has brought together findings using multiple methods, and we find consistent evidence across these that the intervention has a beneficial impact on mental health and wellbeing. We find large improvements in self-reported health, wellbeing and anxiety and depression following the intervention, alongside estimates of the intervention causing a reduction in antidepressant prescribing, GP consultation and A&E attendances, and qualitative accounts describing how the intervention had led to these effects. The relatively low cost of the intervention means that even if the benefits were much lower than estimated here it would still be cost effective. The NHS is currently experiencing massive pressures from increasing demand and financial constraints, with Integrated Care Boards being asked to find cost savings.[64] The findings reported here offer some evidence that direct support provided through health services to help people tackle financial and social adversity should be part of strategies aiming to reduce pressure on the NHS.

4 **Details of patient and public involvement in the research**.

A series of public involvement activities throughout the project have informed the work. This has included agreeing on priorities and research questions, engaging with community organisations to inform the development of analysis and supporting the public dissemination of research findings. Public involvement in the research has been important to remind the research team that the data we use is generated from the lived experiences of the public.

Three Public Advisers were members of the research steering group questioning the research approach contributing ideas to research programme as a whole. Two additional Public Advisers, who were resident within or close to the study area, were recruited specifically to input into the qualitative studies and helped to refine the data collection tools, informed by the Health Inequalities Assessment Tool.[65] All five Public Advisors contributed to the qualitative analysis, including coding of transcripts, refining of identified themes and general sense-making – the implications of what people were telling us.

All five Public Advisors participated in the learning exchange events where interim findings were presented and discussions about their meanings were invited. The final ‘summit’ workshop, where recommendations and dissemination strategies were discussed, also included three additional Advice on Prescription service-users, who had participated as interviewees in the interview study of service-users. All five Public Advisors have been invited to review and contribute to drafts of academic papers and will be acknowledges as authors as appropriate. The Public Advisors have expressed an interest in being involved in the wider dissemination findings to community members, policy makers and professionals. We plan to co-create creative outputs, probably in the form of storytelling, either a video or animation. One of our Public Advisors is an experienced story-teller and has expressed an interest in being involved in this project. In addition, we will produce an accessible written summary of the overall findings and recommendations, with the involvement of the whole research team, including the Public Advisors.

5 **An explanation of how your work addresses equality and diversity issues**

Our study has investigated inequalities in relation to ethnicity, socioeconomic deprivation, age and gender. Understanding differences in uptake and effectiveness of services and interventions across these equity dimensions was central to analysis plans from the outset. The Health Inequalities Assessment Tool[65] was used to inform the analysis plans of each study to support this. The studies have important implications for policies that aim to tackle health inequalities. Analysis in the study highlighted uptake amongst ethnic minority groups has been used during the research to develop and monitor programme outreach. Workshops as part of an associated improvement collaborative focused on improving our understanding of the perinatal pathway and what adjustments might be made in support of better outcomes, for Black, Asian and Minority Ethnic Groups and Asylum Seekers. This led to multiple outreach activities that led to increase uptake of the service amongst these groups.

6 A list of outputs from the project*

3 papers from this project have been submitted for publication:

1. Aregawi, Gebremariam, Piroddi, Roberta, Daras, Konstantinos, Mahoney, Clare, Gabbay, Mark, Anderson De Cuevas, Rachel, Abba, Katherine, et al. "The Impacts of Liverpool Citizen's Advice on Prescription (CAP) on Mental Health Outcomes– an Instrumental Variable (IV) Approach." *Social Science & Medicine (Submitted)*, 2024.
2. Abba, Katharine, Anderson de Cuevas, Rachel, Khan, Koser, Ahmed, Saiqa, Boland, Angel, Holt, Keith, Moran, Paul, et al. "Service-Users' Experience of Accessing Citizens Advice on Prescription: Identifying the Essential Components of a Practical Intervention to Improve Health and Wellbeing." *Social Science and Medicine (Submitted)*, 2025.
3. Granger, Rachel, Hartfiel, , Ned, Ezeofor, Victory, Abba, Katherine, Barr, Ben, Piroddi, Roberta, Mahoney, Clare, and Tudor Edwards, Rhiannon. "Citizen's Advice on Prescription: A Social Return on Investment Evaluation of a Welfare Advice and Social Prescribing Service to Improve Patients' Wellbeing." International Journal of Environmental Research and Public Health (Submitted), 2024.

7 Policy Relevance

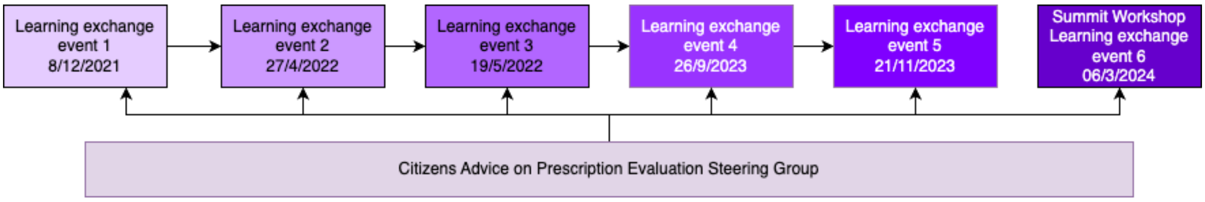
These findings have important implications for practice. Several national policies over the past few decades have proposed that the NHS should have a greater role in tackling the social determinants of health.[66,67] However, it has often been difficult for commissioners and clinicians to know what NHS-focused action on the social determinants should look like in practice. This has been hampered by a lack of evidence comparing the costs and benefits of such approaches to other healthcare interventions. The CAP approach provides a practical option for providing routine social and welfare support accessible through health services, for relatively large numbers of people experiencing high social and health needs.

Characteristics of Liverpool's CAP that are potentially important include a simple rapid referral process without complex eligibility criteria, with case managers pro-actively contacting clients. In other words, clinicians just needed to make one phone call to make the referral and the patient was then contacted within two working days. Health care professionals often juggle competing priorities and the patient group in need of these services are typically dealing with multiple crises. Adding any complexity to the referral process could potentially lead to a large reduction in service uptake by those with the greatest need. Getting the service embedded in new NHS service areas also had challenges, meaning that it took time for it to become normal practice to ask people about their social and economic circumstances and to refer them into the service. Outreach, training and awareness raising with clinicians was an important ongoing component of the approach.[58] As had been found in a related study with Citizens Advice in Liverpool, the DeCODer project, enhanced sharing of information between primary care and Citizens Advice was important for effective implementation.[24]

8 Dissemination

The research was conducted in close collaboration with the provider of the service, commissioners of the service, members of the public and other stakeholders iteratively sharing findings and developing the research process. Findings were regularly reviewed with the steering group as they emerged and dissemination with local stakeholders took place through a sequence of 6 learning exchange events (see figure 21).

Figure 21, Learning exchange events throughout the research programme.



These involved the public, stakeholders and academics in interpreting, contextualizing and responding to the study findings, leading to the development and refinement of recommendations. Workshops 1-5 were attended by around 25-50 representatives from Citizens Advice, NHS organisations, local authorities, third sectors organisations, GPs, members of the public and academics, with the final event including around 80 participants with representation from local and national organisations. Initial workshops involved presenting and comparing emerging findings from across study components, discussing data integration and revisiting the intervention's theory of change. This led onto interpretation of interim results from analysis of referrals, health and healthcare utilization outcomes and economic evaluation. The final summit learning exchange event provided a final forum to consider the implications of our findings for policy and practice and discuss the best forms of dissemination. This collaborative methodological approach provided a valuable opportunity in early workshops for health, social care and public health partners to contribute to the analytic process by querying the research group's interpretation of data, providing alternative explanations, proposing new lines of statistical enquiry and contextualising findings to the local and national service and policy context. At the Summit workshop, participants identified the key messages arising from the CAP evaluation and proposed how to tailor them to targeted audiences during dissemination. They also proposed priority areas for supporting and improving the CAP programme including engaging with communities and stakeholders, considered how to expand CAP geographically and into additional service areas and pathways.

An improvement collaborative, led by the Cheshire and Merseyside Integrated Care Board, was run alongside the evaluation to support the development and improvement of the service across the perinatal pathway. The Best for Baby Too collaborative brought together midwives, health visitors, GPs, and third sector organisations, including Citizens Advice Liverpool. The direct participation of mothers with lived experience of having babies whilst in the asylum system was facilitated by Refugee Women Connect and Liverpool Lighthouse, who established a group of 'Creative Influencers' aiming to promote understanding of and explore the experience of Black, Asian and Ethnic Minority women. This group of mothers were involved throughout the improvement collaborative, writing and performing poetry and plays to highlight the views and needs of using Citizens Advice on Prescription and how the service could be improved. Evidence from the evaluation was fed back to the collaborative, informing their improvement activities. For example, analysis of referrals, identifying service areas with lower than expected uptake, led to renewed activity to engage practitioners and identify new sources of referrals (e.g. children's centres, midwifery Non English Speaking Team).

Further national dissemination is planned. A short film / animation is being developed to explain the findings and recommendations and presentations will be given at national conferences. To coincide with the publication of the associated papers a plain English blog is planned. The research has featured in a case study on the intervention presented in a recent report by the World Health Organisation on health inequalities following the COVID-19 pandemic.[68]

9 **Actual and anticipated impact**

The CAP evaluation has had immediate impacts within the Cheshire and Merseyside Integrated Care system. During the study the re-tendering process for the service commenced and evidence from this study was crucial in making the case for the continued funding of the scheme. Evidence from the research in relation to referral rates across services and population groups was also used during the research programme to inform outreach activities. Working with the Department for Health and Social Care, the NHS and local government organisations across UK we aim to use the evidence presented here to promote the uptake of Citizens Advice on Prescription schemes, inform models adopted and their further evaluation

10 Disclosure of interest statement.

Clare Mahoney is the lead commissioner at NHS Cheshire and Merseyside for the Service. No other authors have any conflicts of interest.

11 Data-sharing statement.

The data used is held NHS by NHS Cheshire and Merseyside and analysis was carried out carried out by analysts seconded to NHS Cheshire and Merseyside. Applications to use the data can be made to the Cheshire and Merseyside Data Assets Access Group.

12 Ethics statement.

Ethics approval was granted from the University of Liverpool Central Ethics Committee, ref: 10313

13 Information Governance statement.

All work was carried out by an analytics team seconded to Cheshire and Merseyside Integrated Care Board (C&M ICB), with access to the C&M ICB Secure Data Environment, following approval from the Cheshire and Merseyside Data Access Approval Group (DAAG).

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15 Abbreviations

A&E	Accident and Emergency
C&M ICB	Cheshire and Merseyside Integrated Care Board
CAP	Citizens Advice on Prescription
DAAG	Data Assets Access Group
EQ5D	EUROQOL – Five Dimensions
NHS	National Health Service
QALY	Quality Adjusted Life Year
SROI	Social Return on Investment
SWMWBS	Scottish Edinburgh Mental Wellbeing Survey
UPRN	Unique Property Reference Number
VAS	Visual Analogue Scale

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Appendix 1. Codes and definition used to define each outcome.

Anti-depressant prescriptions

Data on antidepressant prescribing was sourced from the extract of data from GP practice clinical systems that flows to the Cheshire and Merseyside NHS secure data environment. The quantity of antidepressant prescribed each month included all prescriptions within the BNF chapter 4.3. The quantity of each prescription was then converted into an Average Daily Quantity (ADQ) using a look up table giving the ADQ equivalent for each formulation (see https://pldr.org/download/emyye/ff7/Indicator_specification_p_1_07.pdf)

Mental health related GP consultations

Data on mental health related GP consultations were sourced from the extract of data from GP practice clinical systems that flows to the Cheshire and Merseyside NHS secure data environment. Mental health related GP consultations were defined as any GP encounter or event, limited to a maximum of 1 per day, that included a set of mental health related SNOMED codes the SNOMED codes listed are outlined below.

Table 6: Snomed concept codes to search GP records for common mental health conditions.

cluster	SNOMED Concept	Description
Anxiety	402191000000101	[X] Anxiety disorders: [other specified] or [anxiety hysteria]
Anxiety	192405006	[X]Anxiety disorder, unspecified
Anxiety	450751000000102	[X]Anxiety disorder, unspecified
Anxiety	192399008	[X]Other anxiety disorders
Anxiety	468761000000105	[X]Other anxiety disorders
Anxiety	192403004	[X]Other mixed anxiety disorders
Anxiety	478661000000105	[X]Other mixed anxiety disorders
Anxiety	192397005	[X]Other phobic anxiety disorders
Anxiety	402951000000107	[X]Other phobic anxiety disorders
Anxiety	268714001	[X]Other specified anxiety disorders
Anxiety	469151000000104	[X]Other specified anxiety disorders
Anxiety	192400001	[X]Panic disorder [episodic paroxysmal anxiety]
Anxiety	416621000000108	[X]Panic disorder [episodic paroxysmal anxiety]
Anxiety	192398000	[X]Phobic anxiety disorder, unspecified
Anxiety	464911000000101	[X]Phobic anxiety disorder, unspecified
Anxiety	192393009	[X]Phobic anxiety disorders
Anxiety	472131000000109	[X]Phobic anxiety disorders
Anxiety	192610003	[X]Separation anxiety disorder of childhood
Anxiety	399651000000100	[X]Separation anxiety disorder of childhood
Anxiety	386808001	Abnormal fear
Anxiety	58963008	Acrophobia
Anxiety	192042008	Acute post-trauma stress state
Anxiety	47372000	Adjustment disorder with anxiety
Anxiety	782501005	Adjustment disorder with mixed anxiety and depressed mood
Anxiety	70691001	Agoraphobia
Anxiety	191722009	Agoraphobia with panic attacks
Anxiety	61569007	Agoraphobia without history of panic disorder
Anxiety	34938008	Alcohol induced anxiety disorder
Anxiety	82339009	Amphetamine induced anxiety disorder
Anxiety	191736004	Anancastic neurosis
Anxiety	54307006	Animal phobia
Anxiety	48694002	Anxiety
Anxiety	225644006	Anxiety about altered body image

Anxiety	247808006	Anxiety about body function or health
Anxiety	702535006	Anxiety about breathlessness
Anxiety	300895004	Anxiety attack
Anxiety	231504006	Anxiety depression
Anxiety	197480006	Anxiety disorder
Anxiety	51493001	Anxiety disorder caused by cocaine
Anxiety	724722007	Anxiety disorder caused by dissociative drug
Anxiety	2.2621E+13	Anxiety disorder caused by drug
Anxiety	724723002	Anxiety disorder caused by ketamine
Anxiety	724708007	Anxiety disorder caused by MDMA (methylenedioxymethamphetamine)
Anxiety	724654009	Anxiety disorder caused by opioid
Anxiety	55967005	Anxiety disorder caused by phencyclidine
Anxiety	762331007	Anxiety disorder caused by stimulant
Anxiety	737341006	Anxiety disorder caused by synthetic cannabinoid
Anxiety	762515000	Anxiety disorder caused by synthetic cathinone
Anxiety	52910006	Anxiety disorder due to a general medical condition
Anxiety	37868008	Anxiety disorder of adolescence
Anxiety	53467004	Anxiety disorder of childhood
Anxiety	109006	Anxiety disorder of childhood OR adolescence
Anxiety	788866004	Anxiety due to dementia
Anxiety	231506008	Anxiety hysteria
Anxiety	94641000119109	Anxiety in pregnancy
Anxiety	207363009	Anxiety neurosis
Anxiety	70655008	Caffeine induced anxiety disorder
Anxiety	34563004	Cancer phobia
Anxiety	39951001	Cannabis induced anxiety disorder
Anxiety	192611004	Childhood phobic anxiety disorder
Anxiety	191708009	Chronic anxiety
Anxiety	19887002	Claustrophobia
Anxiety	191737008	Compulsive neurosis
Anxiety	191733007	Cyesiophobia
Anxiety	38617005	Dental phobia
Anxiety	192108001	Disturbance of anxiety and fearfulness in childhood and adolescence
Anxiety	192111000	Disturbance of anxiety and fearfulness in childhood and adolescence NOS
Anxiety	657791000000107	Disturbance of anxiety and fearfulness in childhood and adolescence NOS
Anxiety	371631005	Episodic paroxysmal anxiety disorder
Anxiety	191728008	Fear of crowded places
Anxiety	102912007	Fear of death
Anxiety	21897009	GAD - Generalised anxiety disorder
Anxiety	15277004	Hallucinogen induced anxiety disorder
Anxiety	20876004	Inhalant induced anxiety disorder
Anxiety	54587008	Isolated phobia
Anxiety	70997004	Mild anxiety
Anxiety	61387006	Moderate anxiety
Anxiety	191738003	Obsessional neurosis
Anxiety	17496003	Organic anxiety disorder
Anxiety	50026000	Organic anxiety disorder caused by psychoactive substance
Anxiety	191720001	Phobic anxiety

Anxiety	386810004	Phobic anxiety
Anxiety	47505003	Posttraumatic stress disorder
Anxiety	191709001	Recurrent anxiety
Anxiety	1686006	Sedative, hypnotic AND/OR anxiolytic-induced anxiety disorder
Anxiety	126943008	Separation anxiety
Anxiety	11806006	Separation anxiety disorder
Anxiety	85061001	Separation anxiety disorder of childhood, early onset
Anxiety	80583007	Severe anxiety (panic)
Anxiety	25501002	Social anxiety disorder
Anxiety	191724005	Social phobia, fear of eating in public
Anxiety	191725006	Social phobia, fear of public speaking
Anxiety	191726007	Social phobia, fear of public washing
Anxiety	231521002	Weight fixation
Anxiety symptoms	859891000000103	Able to manage anxiety
Anxiety symptoms	247825008	Anxiety about behaviour or performance
Anxiety symptoms	225642005	Anxiety about not coping with parenthood
Anxiety symptoms	225635005	Anxiety about treatment
Anxiety symptoms	247805009	Anxiety and fear
Anxiety symptoms	69479009	Anxiety hyperventilation
Anxiety symptoms	198288003	Anxiety state
Anxiety symptoms	191711005	Anxiety state NOS
Anxiety symptoms	633361000000109	Anxiety state NOS
Anxiety symptoms	191704006	Anxiety state unspecified
Anxiety symptoms	621271000000109	Anxiety state unspecified
Anxiety symptoms	286709003	Character trait finding of level of anxiety
Anxiety symptoms	81350009	Free-floating anxiety
Anxiety symptoms	286644009	Level of anxiety
Anxiety symptoms	1149156003	Reduced level of anxiety
Depression	310495003	[X]Mild depression
Depression	430421000000104	[X]Mild depressive episode
Depression	465441000000108	[X]Moderate depressive episode
Depression	755331000000108	[X]Recurrent major depressive episodes, severe, with psychosis, psychosis in remission
Depression	397711000000100	[X]Severe depressive episode with psychotic symptoms
Depression	397701000000102	[X]Severe depressive episode without psychotic symptoms

Depression	755321000000106	[X]Single major depressive episode, severe, with psychosis, psychosis in remission
Depression	83458005	Agitated depression
Depression	788120007	Antenatal depression
Depression	790961000000101	Antenatal depression
Depression	231504006	Anxiety depression
Depression	191659001	Atypical depressive disorder
Depression	191627008	Bipolar affective disorder, current episode depression
Depression	191634005	Bipolar affective disorder, currently depressed, in full remission
Depression	192080009	Chronic depression
Depression	14183003	Chronic major depressive disorder, single episode
Depression	357705009	Cotard syndrome
Depression	35489007	Depressed
Depression	196381000000100	Depression resolved
Depression	191495003	Depressive disorder caused by drug
Depression	698957003	Depressive disorder in remission
Depression	78667006	Depressive neurosis
Depression	300706003	Endogenous depression
Depression	191608002	Endogenous depression - recurrent
Depression	274948002	Endogenous depression - recurrent
Depression	231499006	Endogenous depression first episode
Depression	321717001	Involutional depression
Depression	370143000	Major depression
Depression	63412003	Major depression in complete remission
Depression	30605009	Major depression in partial remission
Depression	42810003	Major depression in remission
Depression	70747007	Major depression single episode, in partial remission
Depression	36923009	Major depression, single episode
Depression	19527009	Major depression, single episode, in complete remission
Depression	42925002	Major depressive disorder, single episode with atypical features
Depression	69392006	Major depressive disorder, single episode with catatonic features
Depression	63778009	Major depressive disorder, single episode with melancholic features
Depression	25922000	Major depressive disorder, single episode with postpartum onset
Depression	430852001	Major depressive disorder, single episode, severe with psychotic features
Depression	231500002	Masked depression
Depression	87512008	Mild major depression
Depression	79298009	Mild major depression, single episode
Depression	237349002	Mild postnatal depression
Depression	40379007	Mild recurrent major depression
Depression	720454007	Minimal major depression one episode
Depression	310496002	Moderate depression
Depression	832007	Moderate major depression
Depression	15639000	Moderate major depression, single episode
Depression	16266831000119100	Moderate major depressive disorder co-occurrent with anxiety single episode
Depression	18818009	Moderate recurrent major depression

Depression	719593009	Moderately severe depression
Depression	720453001	Moderately severe major depression one episode
Depression	413169006	On depression register
Depression	1153575004	Persistent depressive disorder
Depression	58703003	Postnatal depression
Depression	104851000119103	Postpartum major depression in remission
Depression	231485007	Post-schizophrenic depression
Depression	426578000	Premenstrual dysphoric disorder in remission
Depression	191455000	Presenile dementia with depression
Depression	192049004	Prolonged depressive adjustment reaction
Depression	765176007	Psychosis and severe depression co-occurrent and due to bipolar affective disorder
Depression	73867007	Psychotic depression
Depression	191676002	Psychotic reactive depression
Depression	87414006	Reactive depression
Depression	288751000119101	Reactive depressive psychosis, single episode
Depression	40568001	Recurrent brief depressive disorder
Depression	191616006	Recurrent depression
Depression	1089641000000100	Recurrent depression with current moderate episode
Depression	1089511000000100	Recurrent depression with current severe episode and psychotic features
Depression	66344007	Recurrent major depression
Depression	46244001	Recurrent major depression in complete remission
Depression	33135002	Recurrent major depression in partial remission
Depression	68019004	Recurrent major depression in remission
Depression	268621008	Recurrent major depressive episodes
Depression	764691000000109	Recurrent major depressive episodes, in partial remission
Depression	764701000000109	Recurrent major depressive episodes, in remission
Depression	191610000	Recurrent major depressive episodes, mild
Depression	191611001	Recurrent major depressive episodes, moderate
Depression	764611000000100	Recurrent major depressive episodes, severe
Depression	191613003	Recurrent major depressive episodes, severe, with psychosis
Depression	413170007	Removed from depression register
Depression	247803002	SAD - Seasonal affective disorder
Depression	84760002	Schizoaffective disorder, depressive type
Depression	191459006	Senile dementia with depression
Depression	310497006	Severe depression
Depression	450714000	Severe major depression
Depression	75084000	Severe major depression without psychotic features
Depression	251000119105	Severe major depression, single episode
Depression	77911002	Severe major depression, single episode, with psychotic features, mood-congruent
Depression	20250007	Severe major depression, single episode, with psychotic features, mood-incongruent
Depression	76441001	Severe major depression, single episode, without psychotic features
Depression	237350002	Severe postnatal depression
Depression	28475009	Severe recurrent major depression with psychotic features
Depression	36474008	Severe recurrent major depression without psychotic features

Depression	764711000000106	Single major depressive episode, in remission
Depression	191601008	Single major depressive episode, mild
Depression	191604000	Single major depressive episode, severe, with psychosis
Depression	1153570009	Treatment resistant depression
Depression review	413972000	Depression annual review
Depression review	413973005	Depression interim review
Depression review	883491000000106	Did not attend depression review
Depression symptoms	871840004	Depressive episode
Depression symptoms	394924000	Depressive symptoms

Mental health related A&E attendances,

A&E attendance counts are sourced from NHS datasets ECDS – Emergency Care Dataset (https://digital.nhs.uk/data-and-information/data-collections-and-data-sets/data-sets/emergency-care-data-set-ecds). Mental health related A&E attendances were defined as all attendances at any A&E department that included a set of SNOMED codes found in any position. The set of codes were derived from a comprehensive search of SNOMED dictionary terms. These are include several thousand codes because of the length of the list we have not included all of them here. The numbers of codes found by comprehensive search in the SNOMED catalogues are in Table 7~~Table 7~~:

Table 7: Number of SNOMED codes for every category of mental health condition searched.

condition	Number of SNOMED codes
Alcohol abuse	338
Suicide and self-harm	552
Eating disorders	79
Substance abuse	2353
Other (depression, severe mental illness)	349

In practice, despite the large number of codes, only few of these were used in ECDS records. In the following tables we list the codes found 2018-2023 in Cheshire and Merseyside. If codes were used in less than 10 records, we have not reported them here.

Table 8: SNOMED codes used to define mental health related A&E attendances.

SNOMED code	**Description**
25702006	Alcohol intoxication (disorder)
85561006	Uncomplicated alcohol withdrawal (disorder)
66590003	Alcohol dependence (disorder)
308742005	Alcohol withdrawal-induced convulsion (disorder)
67426006	Toxic effect of alcohol (disorder)
191480000	Alcohol withdrawal syndrome (disorder)
276853009	Deliberate self-injury
72366004	Eating disorder
56882008	Anorexia nervosa
77675002	Anorexia nervosa, restricting type
66214007	Substance misuse
1156755000	Poisoning caused by gaseous substance (disorder)
295124009	Paracetamol overdose

295830007	Overdose of antidepressant drug (disorder)
307052004	Illicit drug use
242253008	Narcotic overdose
296015009	Sedative overdose
295217003	Non-steroidal anti-inflammatory overdose
296335002	Overdose of beta-adrenergic blocking drug (disorder)
296938005	Iron product overdose (disorder)
296355001	Overdose of calcium-channel blockers (disorder)
242824002	Intentional paracetamol overdose
43302000	Anticoagulant overdose
295125005	Accidental acetaminophen overdose
69322001	Psychotic disorder
13746004	Bipolar disorder (disorder)
25702006	Alcohol intoxication (disorder)
85561006	Uncomplicated alcohol withdrawal (disorder)
66590003	Alcohol dependence (disorder)
308742005	Alcohol withdrawal-induced convulsion (disorder)
67426006	Toxic effect of alcohol (disorder)
191480000	Alcohol withdrawal syndrome (disorder)
25702006	Alcohol intoxication (disorder)
66590003	Alcohol dependence (disorder)
85561006	Uncomplicated alcohol withdrawal (disorder)
308742005	Alcohol withdrawal-induced convulsion (disorder)
191480000	Alcohol withdrawal syndrome (disorder)
67426006	Toxic effect of alcohol (disorder)
276853009	Deliberate self-injury
72366004	Eating disorder
56882008	Anorexia nervosa
77675002	Anorexia nervosa, restricting type
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1156755000	Poisoning caused by gaseous substance (disorder)
295124009	Paracetamol overdose
295830007	Overdose of antidepressant drug (disorder)
307052004	Illicit drug use
242253008	Narcotic overdose
296015009	Sedative overdose
295217003	Non-steroidal anti-inflammatory overdose
296335002	Overdose of beta-adrenergic blocking drug (disorder)
296938005	Iron product overdose (disorder)
296355001	Overdose of calcium-channel blockers (disorder)
242824002	Intentional paracetamol overdose
43302000	Anticoagulant overdose
295125005	Accidental acetaminophen overdose
295124009	Paracetamol overdose
295830007	Overdose of antidepressant drug (disorder)
307052004	Illicit drug use
242253008	Narcotic overdose
295217003	Non-steroidal anti-inflammatory overdose
296015009	Sedative overdose

296335002	Overdose of beta-adrenergic blocking drug (disorder)
69322001	Psychotic disorder
13746004	Bipolar disorder (disorder)
69322001	Psychotic disorder
13746004	Bipolar disorder (disorder)

Mental health related emergency admissions.

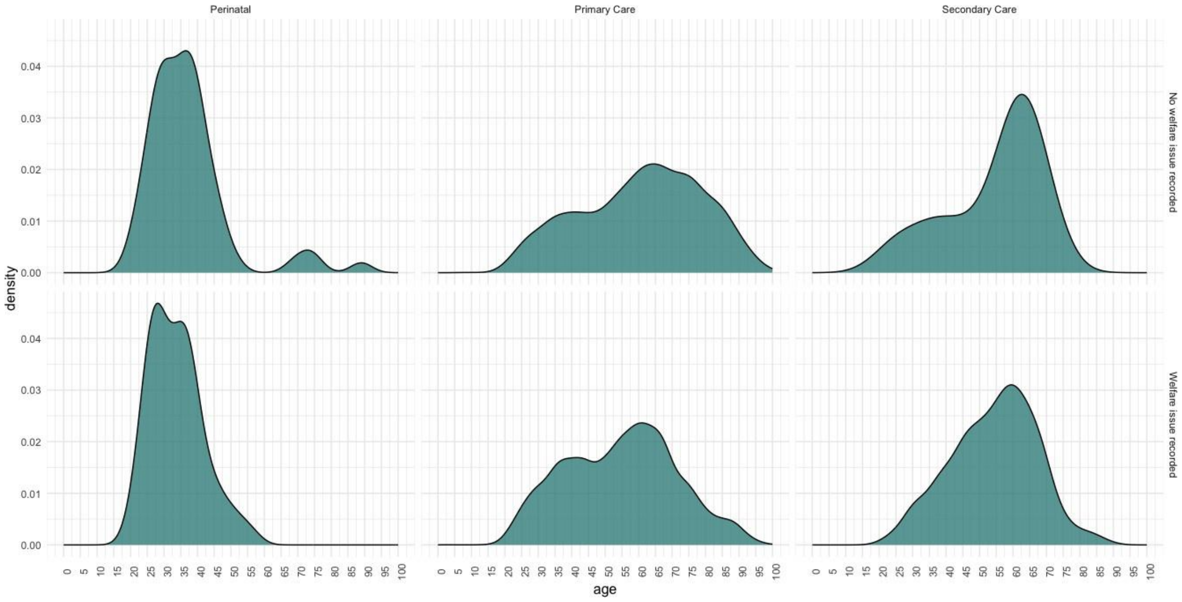
The ICD-10 codes used in this work were cross checked using clinical codes list repository [1] and phenotype library [2], with background from WHO specification [3] and symptoms companion [4]. Mental health related emergency admissions were defined , using Secondary Uses Services (SUS) admitted patient care spell (APCS) tables (https://digital.nhs.uk/services/secondary-uses-service-sus) as any emergency [Admission_Method=2], admission including any of the following codes in any diagnostic position.

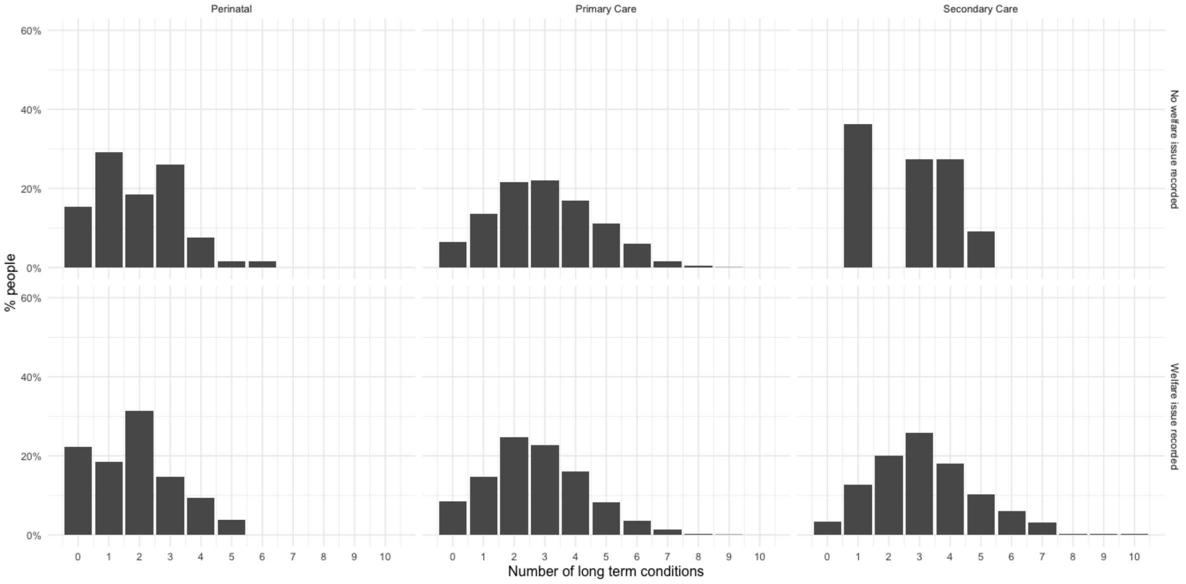
Table 9: ICD-10 codes used to query diagnostic fields in SUS APCS to identify clusters of mental health disorders.

Disorder cluster	ICD-10 code	Description
Self-harm [5,6,7]		
	X60-X84	Intentional self-harm
	Y10-Y34	Injury/poisoning of indeterminate intent
Alcohol [5,6]		
	F10	Mental and behavioural disorders due to the use of alcohol
	X45	Accidental poisoning by and exposure to alcohol
	X65	Intentional self-poisoning by and exposure to alcohol
	Y15	Poisoning by exposure to alcohol of indeterminate intent
Drugs and substance [5,6]		
	F11-F19	Mental and behavioural disorders due to psychoactive substance use (excluding alcohol)
	T36-T50	Poisoning by drugs, medicaments and biological substances
Eating disorders [3,4]		
	F50	Eating disorders
	F98.2	Feeding disorders of infancy and childhood
	F98.3	Pica of infancy and childhood
Other mental disorders [3,4]		
	F20-F29	Schizophrenia, schizotypal and delusional disorders
	F30-F39	Mood [affective] disorders
	F40-F48	Neurotic, stress-related and somatoform disorders

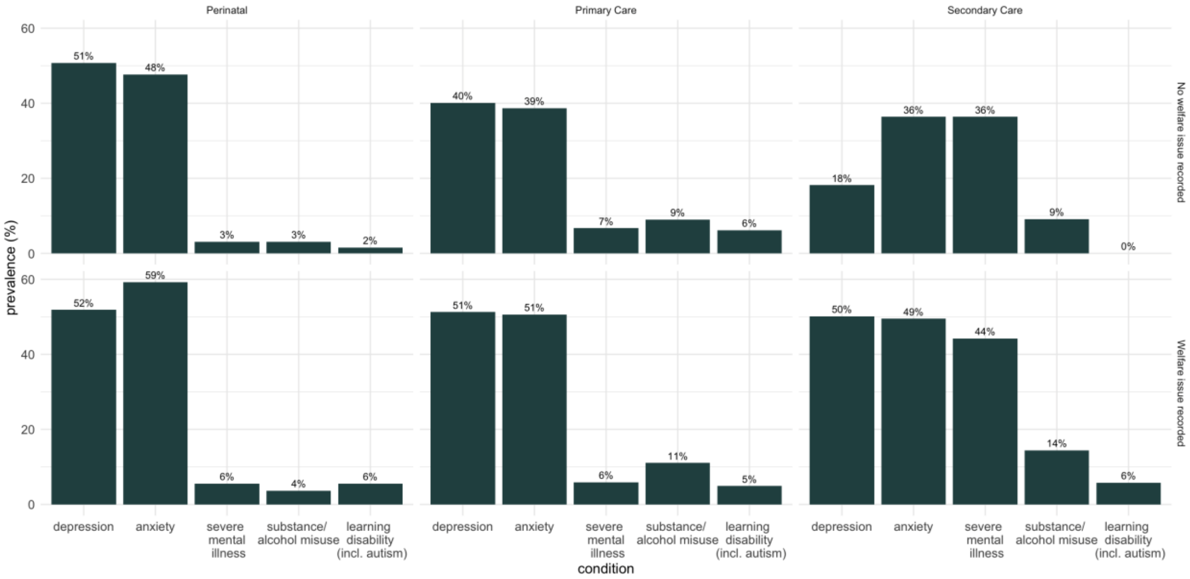
	F51-F59	Behavioural syndromes associated with physiological disturbances and physical factors (excl. eating disorders)
	F60-F69	Disorders of adult personality and behaviour
	F70-F79	Mental retardation
	F80-F89	Disorders of psychological development
	F90-F98	Behavioural and emotional disorders with onset usually occurring in childhood and adolescence
	F99	Unspecified mental disorder
	R45.8	Other symptoms and signs involving emotional state: Suicidal ideation (tendencies)

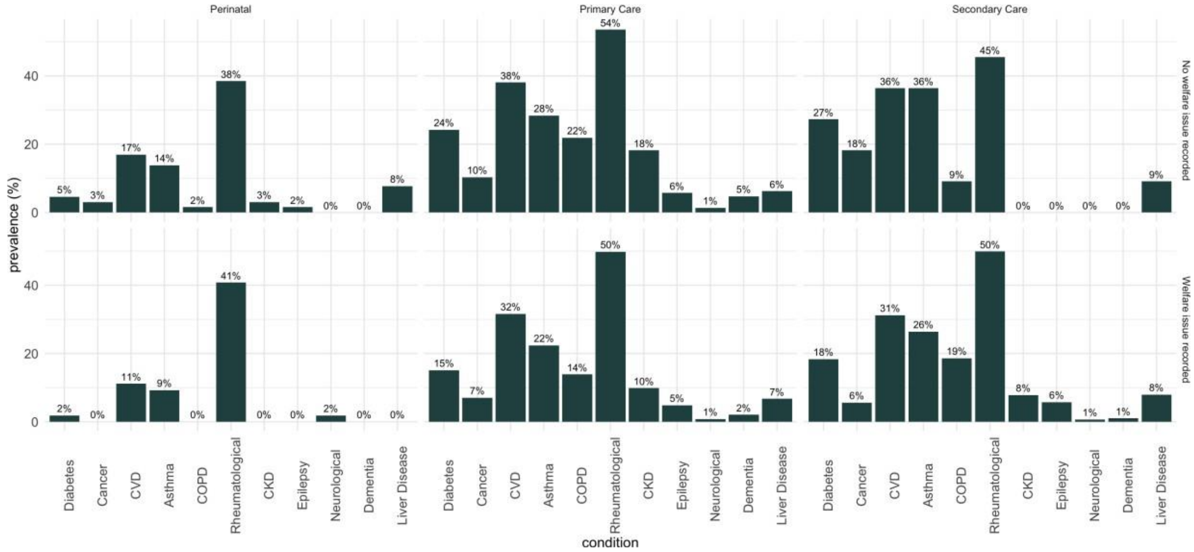
Appendix 2. Suplementary breakdown of health profile by referral pathway and whether clients had a welfare issue or not.



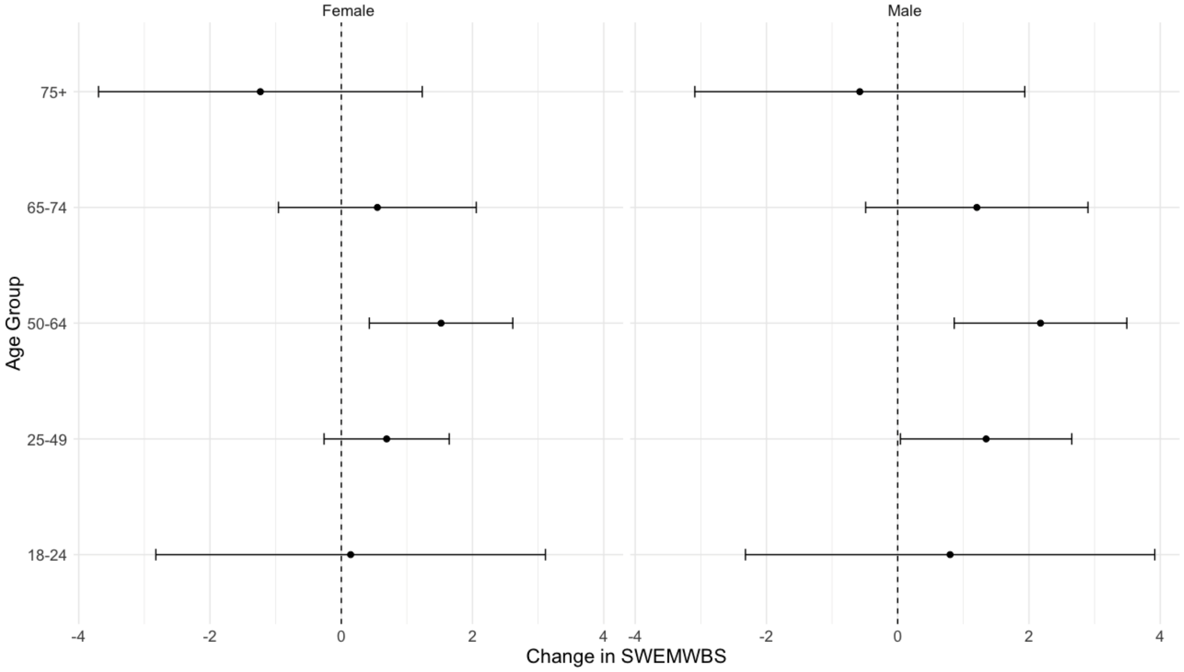


Count of following conditions:cancer, asthma, CKD,Liver Disease,COPD,CVD, depression, anxiety, rheumatological,dementia, diabetes, epilepsy, neurological, Severe Mental Illness





Appendix 3. Change in SWEMWBS score from assessment to follow-up stratified by age group



Change in SWEMWBS score from assessment to follow-up stratified by IMD quintile (5- most deprived 1 – Least deprived) and ethnicity