Psychiatria Danubina, 2023; Vol. 35, No. 4, pp 535-543 https://doi.org/10.24869/psyd.2023.535 *Original paper*

FACTORS ASSOCIATED WITH NON-ATTENDANCE TO OUTPATIENT CONSULTATION-LIAISON PSYCHIATRY APPOINTMENTS: A RETROSPECTIVE COHORT STUDY

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received: 11.11.2021; revised: 30.10.2022; accepted: 22.11.2022

Summary

Background: *Non-attendance to outpatient mental health appointments is associated with adverse clinical and financial outcomes. The aim of this study was to investigate the rates of non-attendance to outpatient Consultation-Liaison Psychiatry (CLP) appointments and the factors associated with non-attendance.*

Subjects and Methods: *Retrospective cohort study, including two groups of data: 950 initial and 3503 follow-up appointments between 01/01/2015 and 31/12/2019. We employed descriptive statistics, parametric/non-parametric tests and logistic regression analysis. We used a range of environmental, socio-demographic and service-related characteristics as independent parameters and non-attendance as the dependent parameter.*

Results: *Initial and follow-up non-attendance rates were 27.5% and 18.8% respectively. Opting-out text message reminders was associated with both initial and follow-up non-attendance. Higher education was associated with initial non-attendance, whereas lower education with follow-up non-attendance. Other factors associated with non-attendance to initial appointments were: English being the participant's primary communication language, having an appointment with a psychiatrist as opposed to a trained nurse or Cognitive Behavioural Therapist, and longer waiting time. Follow-up non-attendance was also associated with younger age, shorter driving distance and higher income/employment.*

Conclusions: *We suggest that improving opt-in rates through a combination of staff and patient education and promotion, improving waiting lists, reducing the stigma associated with seeing a psychiatrist, but also perhaps targeting different socio-economic groups of patients with different strategies should be the focus of policy making to tackle non-attendance. Further research into patient-related and environmental factors, such as day of the week, driving distance, language of primary communication, education, income and employment is warranted in order to design more effective policies and improve engagement with CLP, but also psychiatric services in general.*

Keywords: *Consultation-Liaison Psychiatry, Mental Health Services, service evaluation, non-attendance*

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INTRODUCTION

The problem of non-attendance in Mental Health

Non-attendance to outpatient mental health appointments is a significant concern as it is associated with adverse clinical and financial outcomes (Miller & Ambrose 2019).

Non-attendance in mental health is high compared to physical health, and this is a global trend (Filippidou et al 2014, Rowett et al. 2010). An average non-attendance rate of 19.1% is reported for outpatient psychiatry appointments in the United Kingdom (UK), which is considerably higher than the National Health Service (NHS) – wide figure of 11.7% (Mitchell & Selmes 2007b).

Non-attendance may be associated with deteriorating mental health, lost opportunity for early intervention, and higher rates of psychiatric admission (Killaspy et al. 2000, Miller & Ambrose 2019). These results indicate that mental health non-attendance might be associated with increased psychiatric risk.

An estimated cost of £600 million/year for missed primary care and hospital outpatient appointments in the NHS (McLean et al. 2014), represents a significant societal cost.

Non-attendance is also associated with the provider experiencing increased frustration, lower empathy, and communicating poorly with the patient (Pesata et al. 1999, Husain-Gambles et al. 2004).

A few studies have examined the reasons for non-attendance to mental health outpatient appointments. Several factors have been identified, including environmental, demographic, illness and clinician/referrer factors (Miller & Ambrose 2019, Mitchell & Selmes 2007b). It is commonly identified that non-attendance increases the risk of further non-attendance (Mitchell & Selmes 2007b).

Non-attendance to Consultation--Liaison Psychiatry (CLP) clinics

Mitchell and Selmes (Mitchell & Selmes 2007a) performed a comparative survey of missed appointments among psychiatric sub-specialities in the UK. To our knowledge, this is the only study of its kind, not only in the UK, but also in the international literature. They demonstrated that, unexpectedly, Consultation-Liaison Psychiatry (CLP), was associated with unusually low non-attendance rates to initial appointments (8.8%) and a comparatively high rate of non-attendance to follow-up appointments (21.1%). The study was not designed to further investigate the reasons behind this paradox, but highlighted the need for further investigation.

Contrary to Mitchell and Selmes's (Mitchell & Selmes 2007a) findings, the authors' experience is that non-attendance to initial but also follow-up appointments is amongst the highest, if not the highest, compared to all other psychiatric sub-specialities. When we looked at other specialties in our area, Older Adult Psychiatry had a non-attendance rate of 5.5%, psychology 10.4% and Child and Adolescent Mental Health (CAMHS) service had a rate of 11.8%. These services have multiple locations where they can see patients to accommodate needs but also a lower rate of psychical health challenges.

The patient population cared for by CLP has complex mental and physical health needs (Saraiva et al. 2020). Therefore, non-attendance is of particular relevance as it may be associated with increased risk of adverse outcomes. Based on the above, further examination of this patient population is warranted.

Aims of this study

The aim of this study was to quantify the authors' observations that non-attendance to routine outpatient CLP clinics is considerably high, and to further examine the factors associated with non-attendance among this vulnerable and complex patient population.

SUBJECTS AND METHODS

Study design and definition of the study outcome

A retrospective cohort study design was utilised to asA retrospective cohort study design was utilised to assess factors associated with non-attendance to outpatient CLP appointments.

Non-attendance was defined as a missed appointment for which the patient did not notify the department or the hospital in advance of their unavailability to attend on the offered date of appointment.

We studied two groups of data: (i) initial appointments, and (ii) follow-up appointments, which is a recommended research strategy (Miller & Ambrose 2019, Mitchell & Selmes 2007b). A follow-up appointment can only occur once an attended initial appointment has occurred. A patient may have multiple initial appointments if they had non-attendances prior to being seen.

We examined non-attendance against multiple controlling parameters. We focused on established parameters identified in relevant literature (Mitchell & Selmes 2007b, Miller & Ambrose 2019), but also parameters which made intuitive sense as predictors for non-attendance. These included: age at the time of the referral, gender, first language, education scores, housing affordability area index, driving distance (in kilometres) from the patient's address as this was recorded on the Electronic Patient Records (EPR), day of the week the appointment would take place, whether the patients had opted out the text message reminder service, type of health care professional offering the appointment, and time taken from the day of referral to the day the patient was notified of their appointment.

The parameter "first language" refers to the patient's primary communication language and it was binary (English/non-English). This parameter was preferred compared to Ethnicity which was not filled in to a satisfactory level and there were conflicting suggestions as to which would be most commonly represented by the missing values.

The parameters "Education score" and "Housing affordability area index", "Income" and "Employment" are components of the Index of Multiple Deprivation (IMD). IMD is used in the UK to classify the relative deprivation according to the individual's address, and they are essentially a measure of poverty (Jordan et al. 2004). We used the above four IMD domains as independent parameters. "Income" and "Employment" were transformed into a composite parameter composed of the two IMD domains, and it was named "Income/Employment". These two domains were commonly correlated as when there are more employment opportunities, there is higher income in the area.

The parameter "day of the week" only included weekdays (Monday to Friday) as outpatient CLP appointments were not offered over the weekend at the time of the study. The parameter examining whether the patients had opted out of the text message reminder service was binary (yes/no). "Type of Health Care Professional (HCP type)" was a categorical variable with 3 groups: 1=Psychiatrist, 2=Nurse, 3=Cognitive Behavioural Therapist (CBT).

Data collection and definition of our study population

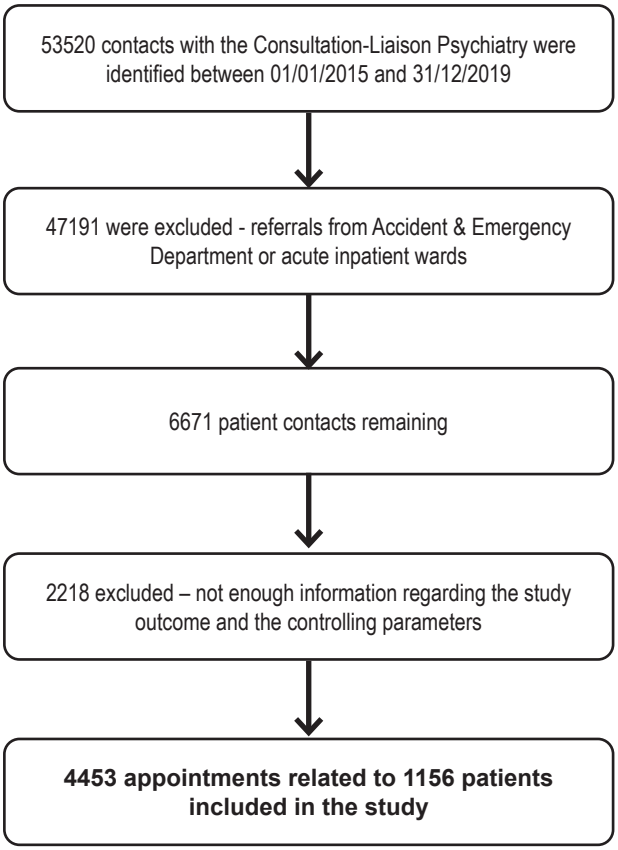
We collected information for the total number of contacts with the Consultation-Liaison Psychiatry Service from the period between 01/01/2015 and 31/12/2019. We used demographic and attendance data collected from the Electronic Patient Records (EPR), and we complemented those with IMD scores and distance from the patient's address to the location of the appointment. The data was collected routinely for service evaluation purposes. As part of the extraction process, data was anonymised. No procedures/interventions were applied directly to human subjects, hence it was not required to obtain informed consent from the patients whose appointments constitute the cohort of this study.

Following this initial search, the inclusion criteria mentioned below were applied to identify the study population: (i) the appointment was outcomed either as "seen" or as "non-attended" (ii) referred by hospital outpatient secondary care services to the routine outpatient CLP clinic (iii) adequate information in the medical records with regards to the study outcome and the aforementioned controlling parameters.

Our initial search identified 53520 contacts with the CLP between 01/01/2015 and 31/12/2019. 47191 contacts were excluded due to the source of the referral being either the Accident and Emergency Department, or acute inpatient hospital wards as the Liaison staff would be going to the patient rather than the patient coming to the CLP outpatient clinic. A further 1114 contacts were excluded due to lack of information with regards to the study outcome and/or the controlling parameters. 4453 appointments relating to 1156 patients were eligible to be included in the study (Figure 1).

In terms of clinical characteristics, all participants in our cohort were over 16 years of age, and fall into one of the following categories: (i) patients with diagnosed or suspected Bodily Distress Disorder as this is defined in ICD-11 (Gureje & Reed 2016); (ii) major psychiatric diagnoses (schizophrenia, major depression, bipolar disorder, moderate and severe personality disorder) comorbid with significant medical illness which requires management by specialists in hospital outpatient clinics; (iii) other presentation in the medical-psychiatric interface, including adjustment to the effects of physical illness/ medical interventions.

Figure 1. Flowchart illustrating the process through which the study cohort was identified, when our inclusion criteria were applied.



Statistical analysis

For our analysis, we employed descriptive and analytical statistics, using parametric and non-parametric methods as appropriate. Logistic regression analysis was conducted using the socio-demographic parameters linked to attendance data as independent parameters, and a binary dependent parameter ("attended" or "did not attend"). We checked regression assumptions, collinearity statistics (Variance Inflation Factor (VIF) and Tolerance), omnibus likelihood ratio testing, and odds ratios (with 95% Confidence Intervals) for each of the parameters used for our resulting logistic regression models. Two "best fit" models were reached, one explaining attendance rates at initial appointment ("initial model"), and one explaining attendance rates at follow-up appointments ("follow-up model"). Both models were constructed on the basis of strong statistical associations of a priori hypothesised predictors with outcome.

Exploratory subgroup analyses were performed to identify potential moderators. All statistical significance was set at the p=0.05 level. The analysis was primarily conducted in SPSS, with some of the data manipulation and some cross checking in R.

RESULTS

Our cohort composed of 1156 patients and their 4453 individual appointments. Patient characteristics appear in Table 1. Two appointment datasets were analysed: One for initial appointments (N=950) and one for follow ups (N=3503). The analysis was primarily conducted in SPSS, with some of the data manipulation and some cross checking in R

Initial Appointment Attendance

950 initial appointments compiled the analysed dataset. The non-attendance rate for initial appointments was 27.5%. Most initial appointments were scheduled with a psychiatrist (56.1%), followed by specialised nurse (29.3%) and CBT therapist (14.6%).

Following logistic regression model iterations, five variables were found to strongly correlate with a non-attendance event (omnibus LR tests in parentheses, table 2)

Patients who "Opted-Out" of Text Message Appointment Reminders (χ^2=22.9, df=1, p<.001): people who opted out had an increased likelihood of missing the appointment.

Education (χ^2=24.8, df=1, p<.001): People who did not attend their initial appointment tended to have a higher education score.

English language (χ^2=5.16, df=1, p=.023): Binary variable denoting English or another language as the primary communication language. Non-English speakers were more likely to attend. Language barrier was expected to be a strong predictor for non-attendance. In the absence of recorded data indicating the use of an interpreter, we used the nearest available proxy variable in our database, which was whether the patient's primary language was English or not.

Healthcare Professional (HCP) **type** (χ^2=22.9, df=2, p=.014): This is a categorical variable with 3 groups. (1 = Psychiatrist, 2 = Nurse, 3 =Therapist CBT). Appointments offered by a therapist were best attended. There was little difference between those invited by Psychiatrists or Nurses.

Time taken from referral to the appointment (χ^2=6.2, df=1, p=.013): The longer the wait, the poorer the attendance. The average wait time for an attended appointment was 41 days, compared to 59 for a non-attendance contact.

Follow Up Appointment Attendance

3503 follow-up appointments compiled the analysed dataset. The non-attendance rate for follow-up appointments was 18.8%. Most follow-up appointments were programmed for Mondays (28.6%), and by a Psychiatrist (44.1%) as opposed to a trained nurse (32.9%) or CBT

Table 1. Descriptive characteristics of the patient population included in the study

Patients	N=1156 patients
Average age at referral	37.4 years
Gender	Female: 63% Male: 37%
Nationality	British: 95% Other: 5%
Ethnic background	White: 88% Other: 12%
Primary Communication Language	English: 98.9% Other: 1.1%
Average Index of Multiple Deprivation (IMD)	4.3 (Ranked top 30-40% deprived areas in the United Kingdom)
Smoking	22%

N=number of patients

Index of Multiple Deprivation (IMD): used in the United Kingdom to classify the relative deprivation according to the individual's address, and it is essentially a measure of poverty

therapist (23%). Most appointments (80.2%) were preceded by a text reminder.

Following logistic regression model iterations, six variables were found to strongly correlate with a non-attendance event (omnibus LR tests in parentheses, table 3).

Day of the working week (χ^2=13.82, df=4, p=.008): The worst day for attendance was Thursday. Tuesday also had poorer attendance but less significantly. Fridays were best attended.

Age at Referral (χ^2=58.7, df=1, p<.001): The older the patients, the more likely they are to attend.

Opt-Out (χ^2=23.62, df=1, p<.001): patients who opted out of text message appointment reminders had an increased likelihood of missing their appointment.

Education (χ^2=3.95, df=1, p=.047): Component of the IMD score. Patients with a lower level of education were less likely to attend follow up appointments.

Driving distance (χ^2=10.67, df=1, p=<.001), was the most significant distance measure in model tests. The closer the patient lives to the hospital, the more likely they are to miss their appointment.

Income/employment (χ^2=12.14, df=1, p=<.001): living in a high employment and high income area correlates with an increase in missed appointments.

DISCUSSION

Non-attendance rates

In this large retrospective cohort study, we examined for the first time outpatient CLP clinic non-attendance rates and the factors associated with it.

In contrast to research demonstrating a low non-attendance rate for outpatient CLP initial appointments (8.8%), followed by a more than double rate for follow-up appointments (21.1%) (Mitchell & Selmes 2007a), we found a much higher rate of initial non-attendance (27.5%) and a lower, albeit still high (18.8%) rate of follow-up non-attendance.

Patients often resent referrals made to CLP, which might explain the initial very high non-attendance rates.

The noticeably lower non-attendance rates in the Mitchell and Selmes study (Mitchell & Selmes 2007a) may be explained by differences in the structure of services, and perhaps a change in patient attitudes towards attendance since that study was published in 2007.

In any case, our findings confirm the hypothesis that non-attendance is followed by further non-attendance (Mitchell & Selmes 2007b). This applies to a CLP patient population as it does to every other patient population.

Table 2. Predictors explaining non-attendance at initial outpatient Liaison Psychiatry appointment: binary logistic regression model

Predictor	Estimate	SE	Z	p	Odds ratio	95% Confidence Interval	
						Lower	Upper
Education (Index of Multiple Deprivation domain)	0.0165	0.00335	4.94	<.001	1.017	1.010	1.023
English language	-0.4186	0.18799	-2.23	0.026	0.658	0.455	0.951
Healthcare Professional role (reference: *Psychiatrist*)							
Nurse	0.3367	0.16879	2.00	0.046	1.400	1.006	1.950
Cognitive Behavioural Therapy Therapist	-0.3802	0.24623	-1.54	0.123	0.684	0.422	1.108
Time from referral to appointment (days)	0.0030	0.00121	2.56	0.011	1.003	1.001	1.005
Opting out of text message reminders for appointments	-1.4932	0.36134	-4.13	<.001	0.225	0.111	0.456
[Intercept]	-1.5935	0.17854	-8.93	<.001	0.203	0.143	0.288

Index of Multiple Deprivation (IMD): used in the United Kingdom to classify the relative deprivation according to the individual's address, and it is essentially a measure of poverty. Education is an element of this composite parameter.

SE: Standard Error, Z=z-score, p=p-value

Table 3. Predictors explaining non-attendance at follow-up Liaison Psychiatry appointments: binary logistic regression model

Predictor	Estimate	SE	Z	p	Odds ratio	95% Confidence Interval	
						Lower	Upper
Opt Out of text message reminders	-0.6066	0.13101	-4.63	<.001	0.545	0.422	0.705
Income/employment (Index of Multiple Deprivation domains)	0.0073	0.00209	3.510	<.001	1.007	1.003	1.012
Driving distance (kilometres)	-0.0200	0.00638	-3.13	0.002	0.980	0.968	0.993
Age at referral	-0.0258	0.00344	-7.51	<.001	0.975	0.968	0.981
Education (Index of Multiple Deprivation domain)	-0.0073	0.00371	-1.98	0.048	0.993	0.985	1.000
Day of the working week (reference: *Tuesday*)							
Monday	-0.1044	0.12569	-0.83	0.406	0.901	0.704	1.152
Wednesday	-0.0666	0.14795	-0.45	0.652	0.936	0.700	1.250
Thursday	0.2089	0.14238	1.46	0.142	1.232	0.932	1.629
Friday	-0.3329	0.13998	-2.37	0.017	0.717	0.545	0.943
[Intercept]	-0.1645	0.17651	-0.93	0.351	0.848	0.600	1.199

Index of Multiple Deprivation (IMD): used in the United Kingdom to classify the relative deprivation according to the individual's address, and it is essentially a measure of poverty. Income and employment are elements of this composite parameter.

SE: Standard Error, Z=z-score, p=p-value

Based on the above, strategies that are designed to tackle initial non-attendance could be equally useful to a CLP outpatient service and should be considered.

Initial non-attendance

Our findings suggest that opting out of Text Message Appointment Reminders is linked to initial non-attendance. Similar interventions in other outpatient settings have been proven effective in reducing non-attendance, with the text messaging being the most cost-effective (Stubbs et al. 2012). Our results imply that adopting an opt-in system as dictated by GDPR (General Data Protection Regulation), could be detrimental for non-attendance rates. Improving opt-in rates through a combination of staff and patient education and promotion could help reduce non-attendance in outpatient CLP settings. There is evidence that a simple prompt can improve attendance (Reda et al. 2001). Admissions are an incredible opportunity for CLP staff to prompt a therapeutic relationship which can be carried over to outpatient clinics, thus improving attendance.

We also found that the time taken from the referral to the appointment was a significant predictor of initial non-attendance. The longer the wait, the poorer the attendance. This is, again, in keeping with literature examining factors associated with non-attendance in other outpatient settings (Grunebaum et al. 1996, Miller & Ambrose, 2019). It therefore seems important for CLP services to be able to keep on top of their waiting lists. Shorter waiting lists could result in less initial non-attendance, which, in turn, could result in further reduction of waiting times, perhaps following an exponential rate of change.

An interesting finding was that people whose primary communication language was non-English had a better rate of initial attendance. It has been shown that one of the most significant barriers to obtaining healthcare is someone's inability to explain oneself (Drapalski et al. 2008). We speculate that increased attendance might be a way to compensate for the significant barrier to obtaining healthcare language imposes.

Interestingly, higher education was a risk factor for initial non-attendance in our study, but the opposite was observed for follow-up appointments. Higher education has long been associated with higher socioeconomic status (Broer et al 2019). The latter is a protective factor for non-attendance (Mitchell & Selmes 2007b). Hence, our findings for initial appointments seem to contradict the

literature as well as our results for follow-up appointments. CLP is a busy tertiary service with long waiting times, and one can hypothesise that highly educated patients would perhaps be more proactive in searching and accessing alternative interventions in primary care or indeed in the private sector. Of note, in our study, educational achievement was an IMD component which reflects address-specific characteristics.

Lastly, the type of the healthcare professional was also a significant predictor of initial non-attendance in our study, with CBT therapist initial appointments being better attended compared to appointments with Community Psychiatry Nurses (CPNs) and Psychiatrists. Appointments with a Psychiatrist had the worst attendance rates. Studies have demonstrated relatively lower non-attendance rates for psychotherapy compared to medical and psychiatric outpatient appointments (5.1 – 13% vs. 19.1%) (Mitchell & Selmes 2007b, Mitchell & Selmes 2007a, DeFife et al. 2010). This could be due to psychotherapy being more acceptable to the patient, conversely to the stigma surrounding Psychiatrists and the intervention that they would offer.

Non-attendance to follow-up appointments

In terms of factors associated with non-attendance to follow-up appointments, as expected, opting-out the Text Messaging Reminders was, again, a predictor of non-attendance. There is evidence that a simple prompt can improve attendance (Rowett et al. 2010). Admissions are an incredible opportunity for CLP staff to prompt a therapeutic relationship which can be carried over to outpatient clinics, thus improving attendance.

Interestingly, levels of education had an inverse influence on attendance to a follow-up appointment compared to an initial appointment. For follow-up appointments, people with lower levels of education were less likely to attend. This difference could perhaps be influenced by the relationship between socioeconomic status and education, including factors like lower social desirability scores and attitudes towards care, insight into and education regarding illness, substance misuse (Mitchell & Selmes 2007b), among other factors.

We also found that younger age was a predictor of follow-up non-attendance, which is in keeping with other published research (Miller & Ambrose 2019, Mitchell & Selmes 2007b, Mitchell & Selmes 2007a).

Driving distance from the patient's home address to the appointment venue was a significant predictor of follow-up non-attendance. In contrast with other published research (Miller & Ambrose 2019, Mitchell & Selmes 2007b), we found that the closer the patient lives to the hospital, the more likely they are to miss their follow-up appointment. Although our study design did not allow for a more detailed investigation into the factors influencing this relationship, we hypothesize that complacency could be a contributing factor.

Day of the working week was a significant predictor of non-attendance. However, a working explanation for this observation cannot be provided at this stage.

Higher "Income/Employment", was linked to follow-up non-attendance. This could be explained by the fact that working hours conflict with appointment times.

Limitations of the study

There are inherent limitations to our study design that could have affected the ability of the models to predict non-attendance. Firstly, we could not directly examine which information the patients based their decisions on, and we had no way of identifying whether non-attendance was intentional or accidental. There are also several factors that we could not measure, including the influence of the weather, caring responsibilities, physical health challenges, cultural barriers other than primary communication language, but also communication between the patient and the referrer, as well as attitudes of the patients towards the CLP. For future studies, engaging with patients to understand their reasons for non-attendance, as well as understanding perceived barriers from a patient perspective, would allow for a deeper understanding of this cohort of patients.

CONCLUSIONS

Our study indicates considerably higher non-attendance rates for CLP than previously reported. Our findings highlight that the hypothesis that non-attendance is followed by further non-attendance applies to CLP as it does to every other mental and physical health setting. This finding is significant, considering the complexity of physical and mental health problems in the patient population CLP cares for, and the associated risks of non-attendance. Strategies that are designed to tackle initial non-attendance could be equally useful to a CLP and should be considered.

Each hospital appointment costs the UK National Health Service approximately £120 (Torjesen 2015). Based on this figure, missed appointments in our cohorts had a direct cost of approximately £110000 in 5 years, which is almost equivalent to the cost of hiring and retaining one new nurse per year in the UK. Indirect and collateral costs should also be taken into account,

including costs of higher service utilization and inpatient care, due to adverse outcomes linked to non-attendance.

We suggest that improving opt-in rates through a combination of staff and patient education and promotion, improving waiting lists, reducing the stigma associated with seeing a psychiatrist, but also perhaps targeting different socio-economic groups of patients with different strategies should be the focus of policy making to tackle non-attendance. Prediction models using machine and deep learning approaches are promising tools worthy of further research (Dashtban & Li 2021)

Further research into patient-related and environmental factors, such as day of the week, driving distance, language of primary communication, education, income and employment is warranted in order to design more effective policies and improve engagement with CLP but also psychiatric services in general.

In the post-COVID-19 era, within the CLP population and their higher physical health needs, remote consultations may have a large impact on attendance as it's less physically demanding. This is an area worthy of further research.

Comments for reviewers: None
Ethical Considerations: Because the data was collected routinely for service evaluation, and no new methodology was applied, Research Ethics Committee approval was not required. The project received Institutional Review Board Approval from the Research and Evaluation Department of the Nottinghamshire Healthcare NHS Foundation Trust.
Does this study include human subjects? NO
Conflict of interest: No conflict of interest
Funding sources: The authors received no funding from an external source
Authors contributions: Lori Edwards Suarez: conceptualisation, methodology, investigation, methodology, software, data curation, validation, resources, writing – original draft, writing – review and editing. Andreas S. Lappas: conceptualisation, methodology, investigation, data curation, supervision, writing – review and editing, visualisation. Nikos G. Christodoulou: conceptualisation, methodology, investigation, formal analysis, supervision, project administration, writing – review and editing

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