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Is disinvestment from alcohol and drug treatment services associated with treatment access, completions and related harm? An analysis of English expenditure and outcomes data

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Abstract

Introduction. The positive impact of substance use treatment is well-evidenced but there has been substantial disinvestment from publicly funded treatment services in England since 2013/2014. This paper examines whether this disinvestment from adult alcohol and drug treatment provision was associated with changes in treatment and health outcomes, including: treatment access, successful completions from treatment, alcohol-specific hospital admissions, alcohol-specific mortality and drug-related deaths. **Methods.** Annual administrative data from 2013/2014 to 2018/2019 was matched at local government level and multi-level time series analysis using linear mixed-effect modelling conducted for 151 upper-tier local authorities in England. **Results.** Between 2013/2014 and 2018/2019, £212.2 million was disinvested from alcohol and drug treatment services, representing a 27% decrease. Concurrently, 11% fewer people accessed, and 21% fewer successfully completed, treatment. On average, controlling for other potential explanatory factors, a £10 000 disinvestment from alcohol and drug treatment services was associated with reductions in all treatment outcomes, including 0.3 fewer adults in treatment (95% confidence interval 0.16–0.45) and 0.21 fewer adults successfully completing treatment (95% % confidence interval 0.12–0.29). A £10 000 disinvestment from alcohol treatment was not significantly associated with changes in alcohol-specific hospital admissions or mortality, nor was disinvestment from drug treatment associated with the rate of drug-related deaths. **Discussion and Conclusions.** Local authority spending cuts to alcohol and drug treatment services in England were associated with fewer people accessing and successfully completing alcohol and drug treatment but were not associated with changes in related hospital admissions and deaths. [Roscoe S, Pryce R, Buykx P, Gavens L, Meier PS. Is disinvestment from alcohol and drug treatment services associated with treatment access, completions and related harm? An analysis of English expenditure and outcomes data. *Drug Alcohol Rev* 2021]

Key words: alcohol, drugs, treatment, disinvestment, public health, local government.

Introduction

Despite the wealth of evidence that alcohol and drug treatment are effective at reducing health and social harms [1–4], there has recently been substantial disinvestment from publicly-funded treatment systems in various countries [5–9]. Worldwide each year, over 3 million lives are lost due to the misuse of alcohol and the non-medical use of opioids is associated with premature deaths [4,10]. Global disability-adjusted life years attributable to alcohol and drugs are over 99 million and almost 32 million, respectively [11]. Due to the recognised burden, reducing the harm from the misuse of alcohol and drugs, through prevention and treatment, are global health priorities [12].

Public health investment provides a good return on investment in terms of health outcomes [13,14]. Effective substance use treatment improves health and social outcomes for individuals, families and communities [15,16]. This includes reduced consumption and abstinence [17], a reduction in risk-taking behaviour [18], reduced offending [19,20] and reduced mortality [4,21,22].

In England, the majority of treatment services are publicly funded via the Public Health Grant [23]. The *Health and Social Care Act* 2012 transferred many

public health responsibilities from the National Health Services, and an allocated Public Health Grant, to 152 England local government areas. Each local authority, serving a mean population of 297 286 (SD 226761), were made responsible for the administration of the grant. Included within the transfer of responsibilities was the commissioning of alcohol and drug treatment services, and the protected status of the alcohol and drug budget—which prevented it being spent on other public health priorities—was removed [24]. At the same time, England experienced a national government-led austerity program, resulting in sustained reductions in total local authority funding. This amounted to estimated losses of £9.8 billion (−38%) between 2009/2010 and 2018/2019 [25], including a £700 million (15%) reduction between 2015/2016 and 2019/2020 in the Public Health Grant [26].

A recently-published study examined the relationship between specialist alcohol treatment provision, alcohol-related admissions and deprivation in England [27]. However, to our knowledge, no previous studies have been conducted to assess the relationship between disinvestment from alcohol and drug treatment services and changes in treatment access or outcomes at a local authority level.

This paper contributes to the literature by examining how changes in alcohol and drug treatment investment in English local authorities between 2013/2014 and 2018/2019 were associated with changes in treatment access and successful completions, and wider alcohol and drug-related harm.

Methods

Data

The units of analysis in this study were 151 of the 152 upper tier local authorities (local government offices) in England. The Isles of Scilly were excluded from analysis due to alcohol and drug treatment and mortality data not being available for the authority. The data is taken for the financial years 2013/2014 to 2018/2019 inclusive.

The main variable of interest is expenditure on treatment services from the Public Health Grant. This data is extracted from each local authority's publicly available General Fund Revenue Account Outturn [28]. Net expenditure data are available from 2013/2014 onwards for alcohol and drugs separately. For 2013/2014 and 2014/2015, the figure reported for each substance type included all activities (i.e. treatment, prevention and harm reduction). However, from 2015/2016 to 2018/2019, the reported spend was

separated into 'treatment' and 'prevention/harm reduction' streams. We added these streams together to enable comparison of net expenditure across years. Expenditure data were converted into real terms using the Retail Price Index with 2013/2014 as the baseline year [29].

The treatment outcomes of interest were obtained from the National Drug Treatment Monitoring System via Public Health England [30], which compiles data about all people accessing publicly-funded structured treatment [17]. For each local authority, we used data on the number of adults who were: (i) in treatment; (ii) new to treatment (within that year); (iii) leaving treatment successfully free of dependence; and (iv) leaving treatment successfully and not returning to treatment within 6 months. Treatment data classify treatment into four categories: 'alcohol only', 'opiate', 'non-opiate only' and 'alcohol and non-opiate'.

The health outcomes of interest are: (i) alcohol-specific hospital admissions, which are admissions where the primary or secondary diagnosis is wholly attributable to alcohol [31]; (ii) alcohol-specific mortality where the cause of death is wholly attributable to alcohol [32]; and (iii) drug-related deaths [33]. Due to small counts health outcomes (ii) and (iii) were pooled over two financial years. The time lag to data publication meant that data for local authorities were only available for 4 years for alcohol-specific and 5 years for drug-related mortality.

Summary statistics for treatment expenditure are presented in Table 1. The majority (88%) of local authorities saw a decrease in total substance treatment expenditure. Between 2013/2014 and 2018/2019 a total of £212 million was disinvested from treatment.

Statistical analysis

Paired *t*-tests were used to examine the change in each variable over the sample period. The main analysis used multi-level linear mixed-effect models. Linear mixed-effect models are flexible models that enable regression using longitudinal data with continuous dependent variables [34]. Local authorities, population size [35] and financial year were adjusted for as fixed effects. The local authority fixed effect controls for unobserved heterogeneity across local authorities, accounting for time-invariant characteristics. The inclusion of financial year as a fixed effects controls for secular time trend effects which affect every local authority and pick up factors such as increased prescribing costs. Due to the recent integration of many community alcohol services with drug treatment [5,36], analyses examined combined alcohol and drug

Table 1. *Patterns in local authority changes in treatment expenditure between 2013/2014 and 2018/2019*

Increased or decreased investment in treatment			Number of local authorities *n* and (%[a])	Total change in treatment expenditure £m (SD)		
Substance use	Alcohol	Drug		Substance use	Alcohol	Drug
Increased	Increased	Increased	5 (3)	+£5.83 (1.81)	+£0.84 (0.15)	+£4.99 (1.19)
Increased	Increased	Decreased	4 (3)	+£1.41 (0.59)	+£4.49 (1.56)	−£3.09 (0.97)
Increased	Decreased	Increased	6 (4)	+£11.31 (2.2)	−£5.40 (1.10)	+£16.71 (2.97)
Decreased	Increased	Decreased	67 (44)	−£114.11 (1.68)	+£45.73 (0.78)	−£159.98 (2.21)
Decreased	Decreased	Increased	8 (5)	−£6.96 (0.75)	−£11.47 (1.16)	+£4.51 (0.72)
Decreased	Decreased	Decreased	61 (40)	−£109.68 (1.50)	−£34.80 (0.70)	−£74.89 (1.09)
Total net change in spend:				−£212.21 (1.79)	−£0.60 (1.06)	−£211.61 (2.13)

[a]Percentages do not sum to 100 due to rounding.

(hereafter "substance use") treatment data as well as alcohol (alcohol only) and drug (opiate and non-opiate) treatment independently.

The regression equation used was:

$$Y_{it} = \alpha + \beta_1 INVESTMENT_{it} + \beta_2 POP_{it} + \delta_i + \delta_t + \varepsilon_{it}$$

where Y_{it} denotes the outcome of interest in local authority i in financial year t. Separate regressions were run for alcohol, drugs and total substance use. In each case, the independent variable was the substance-specific investment. For example, we estimated the relationship between the investment in *alcohol* treatment and the number of people accessing *alcohol* treatment services. The separate alcohol and drug treatment analysis excluded the 'non-opiate and alcohol' treatment numbers as, unlike the other cohorts, there is no set classification as to whether a person in this cohort accessed alcohol treatment or drug treatment. For robustness, we included non-opiate and alcohol cohort numbers in the dependent variable for the modelling of binary alcohol and drug treatment analyses. This made little difference to the results and can be found in Table A1, Appendix.

As the focus of this study is the relationship between disinvestment and treatment and health outcomes, the model results are presented in terms of 'per £10,000 disinvested'.

Ethics and public involvement

This research was granted ethical approval by the University of Sheffield School of Health and Related Research ethics board. The Sheffield Addiction Recovery Research Panel, a group of people with lived experience of alcohol and drug dependence established to shape alcohol and drug-related research, was consulted on the research questions and design before analysis.

Results

Paired t-tests

The results from the paired *t*-tests are presented in Table 2. There was statistically significant disinvestment from substance use treatment and drug treatment between 2013/2014 and 2018/2019. The small decrease in the amount invested in alcohol treatment was not statistically significant. The decline in investment was consistent over the 6 years with the exception of the money invested in alcohol treatment, which rose to a peak in 2015/2016.

Concurrently, there was a significant decline in all observed treatment outcomes. This includes an observed 33 580 fewer people accessing treatment, 15 060 fewer people new to treatment, 14 330 fewer people successfully completing treatment and 11 785 fewer successfully completing treatment and not returning within 6 months. There was a statistically significant decrease in all alcohol treatment outcomes. Table 2 also shows statistically significant increases in alcohol-specific hospital admissions, alcohol-specific mortality and drug-related deaths.

Linear mixed-effects models

Table 3 shows that disinvestment from substance use treatment services was related to reductions in the number of adults in substance use treatment, new to substance use treatment, successfully completing substance use treatment and successfully completing

Table 2. *Annual changes in investment, treatment and health variables between 2013/2014 and 2018/2019 with paired* t-*test results*

		Mean per local authority (SD)						% change	Mean paired difference (SD)[a]	P-value
		2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019			
Substance use	Money invested in treatment (£000 s)	5283 (3449)	5249 (3513)	4933 (3190)	4619 (2996)	4202 (2778)	3878 (2506)	−27%	−1405 (1795)	<0.001
	Number in treatment	1999 (1321)	1955 (1286)	1913 (1252)	1851 (1210)	1776 (1136)	1777 (1125)	−11%	−222 (426)	<0.001
	Number new to treatment	974 (650)	937 (623)	913 (601)	868 (562)	842 (539)	875 (539)	−10%	−100 (300)	<0.001
	Number of successful completions	461 (345)	442 (321)	417 (298)	406 (290)	382 (266)	366 (255)	−21%	−95 (207)	<0.001
	Number of successful completions and not return within 6 months	440 (328)	443 (327)	417 (293)	404 (283)	385 (269)	362 (249)	−18%	−78 (197)	<0.001
Alcohol	Money invested in treatment (£000 s)	1333 (1266)	1355 (1256)	1537 (1352)	1516 (1300)	1412 (1112)	1329 (1019)	- < 1%	−4 (1065)	0.963
	Number in treatment	607 (415)	590 (398)	563 (384)	533 (360)	502 (331)	501 (333)	−17%	−106 (219)	<0.001
	Number new to treatment	431 (305)	407 (286)	382 (268)	353 (234)	335 (231)	347 (235)	−19%	−84 (168)	<0.001
	Number of successful completions	238 (184)	233 (168)	219 (160)	211 (155)	200 (145)	194 (139)	−18%	−44 (116)	<0.001
	Number of successful completions and not return within 6 months	228 (175)	231 (172)	219 (157)	210 (153)	199 (143)	191 (138)	−16%	−36 (111)	<0.001
	Alcohol-specific hospital admissions (rate per 100 000)	639 (255)	631 (252)	642 (245)	624 (234)	629 (223)	694 (268)	+9%	55.2 (145)	<0.001
	Alcohol specific mortality (rate per 100 000)	11.2 (4.3)	11.4 (4.6)	11.6 (4.5)	11.7 (4.4)			+4%	0.5 (1.9)	<0.001
Drugs	Money invested in treatment (£000 s)	3950 (2890)	3894 (2984)	3396 (2417)	3103 (2326)	2790 (2246)	2548 (1815)	−35%	−1401 (2133)	<0.001
	Number in treatment	1201 (847)	1178 (819)	1163 (800)	1132 (786)	1091 (747)	1087 (732)	−9%	-115 (212)	<0.001
	Number new to treatment	416 (299)	408 (283)	407 (274)	395 (273)	382 (253)	394 (242)	−5%	−22 (129)	0.038
	Number of successful completions	154 (135)	143 (117)	135 (99)	131 (99)	119 (84)	111 (81)	−28%	−43 (88)	<0.001
	Number of successful completions and not return within 6 months	147 (130)	145 (122)	135 (99)	130 (93)	122 (90)	112 (78)	−24%	−35 (83)	<0.001
	Drug related deaths (rate per 100 000)	6.3 (2.7)	6.7 (2.9)	7.0 (3.2)	7.4 (3.4)	7.8 (3.6)	—	+24%	+1.5 (1.8)	<0.001

[a]Paired *t*-test comparing 2018/2019 with 2013/2014.

Table 3. *Linear mixed-effects modelled relationship between disinvestment, treatment and health outcomes 2013/14 to 2018/19*

		All local authorities		
Per £10 000 disinvestment from:	Outcomes	β coefficient	SE	*P*-value
Substance use treatment (alcohol and drug combined)	Numbers in treatment	−0.303	0.075	<0.001
	Numbers new to treatment	−0.166	0.054	0.002
	Number of successful completions	−0.205	0.042	<0.001
	Number of successful completions and not return within 6 months	−0.192	0.041	<0.001
Alcohol treatment	Numbers in treatment	−0.102	0.059	0.083
	Numbers new to treatment	−0.041	0.045	0.365
	Number of successful completions	−0.071	0.035	0.043
	Number of successful completions and not return within 6 months	−0.067	0.033	0.044
	Alcohol-specific hospital admissions (rate)	−0.048	0.036	0.184
	Alcohol-specific mortality (rate)	−0.001	0.001	0.216
Drug treatment	Numbers in treatment	−0.133	0.027	<0.001
	Numbers new to treatment	−0.106	0.019	<0.001
	Number of successful completions	−0.060	0.014	<0.001
	Number of successful completions and not return within 6 months	−0.072	0.014	<0.001
	Drug related deaths (rate)	−0.000	0.000	0.613

substance use treatment without returning within 6 months.

The results show that every £10 000 disinvestments in substance use treatment services was associated with 0.3 fewer adults in substance use treatment, 0.17 fewer adults new to substance use treatment, 0.21 fewer adults successfully completing substance use treatment and 0.19 fewer adults successfully completing substance use treatment and not returning within 6 months. Presented differently, this means that every £33 003 disinvested from substance use treatment services was associated with one less person engaged in treatment, and every £48 780 disinvested was associated with one less person successfully completing treatment. Overall, we estimate that the £212.21 million disinvested from substance use treatment was associated with 6430 fewer people in treatment, 3523 fewer people new to treatment, 4350 fewer people successfully completing treatment and 4074 fewer successful completions where the person does not return to treatment within 6 months.

The relationship between changes in investment and treatment outcomes was similar when considered for alcohol and drugs separately. However, there were no significant associations between disinvestment in alcohol treatment and numbers in alcohol treatment, including those new to alcohol treatment.

In terms of health outcomes, there were no significant associations between disinvestment in alcohol treatment and changes in alcohol-specific hospital admissions or alcohol-specific mortality, nor changes in investment in drug treatment and drug-related deaths.

Discussion

This study has shown that reductions in treatment expenditure were associated with reductions in the number of people accessing and successfully completing treatment. No significant associations were found between disinvestment and increased rates of alcohol-specific hospital admissions, alcohol-specific mortality or drug-related deaths, although these results need to be interpreted with caution.

This study makes novel use of routinely collected and publicly available financial, treatment and health data to explore important relationships between sustained public health grant disinvestment from alcohol and drug treatment and key public health outcomes. To our knowledge, it is the first study to provide quantitative evidence of the association between disinvestment from alcohol and drug treatment services and a reduction in treatment access and successful completions. Furthermore, by exploring the funding of systems, as opposed to single interventions, we provide useful results to understand the impact of public health disinvestment for policymakers [15].

Despite the identified association between disinvestment and fewer treatment outcomes in our study, and

consistent evidence of the link between treatment and positive health outcomes [4,15,21], our study did not find that disinvestment was related to increased alcohol-specific admissions, alcohol-specific mortality, nor drug-related deaths over the period we were able to study. However, these results need to be interpreted with caution. There are four possible explanations for this. First, there is likely to be a time lag between reduced consumption and health harm, especially when using harm metrics indicative of significant disease progressions such as hospital admissions and deaths. The full effect of disinvestment on harm may therefore only emerge in future years. Second, a large proportion of people who may benefit from alcohol and drug treatment do not access support [37]. Given that the overall majority are not in contact with services, aggregate population-level data such as hospital admissions or death rates are less likely to be sensitive to changes in treatment access and completion rates. Third, changes in treatment needs may be driving disinvestment from treatment services. However, treatment need is difficult to measure. Furthermore, hospital admissions and mortality are used in estimating alcohol dependence prevalence which could lead to circularity in the model. Prevalence estimates have remained constant or increased over time while investment has decreased which suggests that the results found in this paper are not driven by a decline in treatment need. Fourth, it is possible that the lack of identified relationships between disinvestment and health outcomes could be partially explained by a potential shift from treatment to prevention.

Given the evidence on the positive impact of substance use treatment on health and social outcomes and reducing cost pressures elsewhere in the system, policymakers at a local authority and national level may wish to use the findings from this study to help inform future planning. Further changes to the way in which treatment services in England are funded are expected in April 2021, when the central government's public health grant will no longer be available and local authorities will need to raise income from local business taxes [38]. Concerns have been raised as to whether this will prompt further disinvestment in alcohol and drug treatment, limiting the quality and range of services that can be provided [39]. The coronavirus pandemic is also predicted to further increase pressure on public health budgets and priorities [40] and to drive change in how treatment is delivered, with perhaps unknown effects on costs.

Further research to examine changes in treatment provision and, for example, treatment modalities, intensity and duration of support, or satisfaction with service provision, may offer additional insight. Qualitative research with local authority stakeholders,

including politicians, alcohol and drug treatment strategists and commissioners, could further explain decision making around (dis)investment and better understand additional changes contributing to the observed trends. This may also help to identify strategic and commissioning practice that has helped to mitigate some of the potential negative consequences of disinvestment in a local authority context. This study could also be replicated in other high-income countries where substance use treatment services are publicly-funded and cost pressures are increasing [7,8], to add to the body of evidence. Further research could also investigate the relative effects of disinvestment in several areas of public health given the finite resource available. Potentially, there may be other public health expenditures that generate higher rates or return on investment. Future research could examine threshold effects of cuts, similar to other studies [41].

A limitation of the study is that it uses observational data and as such causal statements cannot be made. An alternative explanation for our findings would be that disinvestment might have been an appropriate response to a drop in demand. However, this appears less plausible given the political context of widespread funding cuts across many public services, persistent high rates of unmet need [42] and well-documented concerns by treatment practitioners [6,36].

Furthermore, this study does not account for contextual changes during the study period that could have influenced the observed relationship, including changes to the way services are contracted and provided, or broader policy changes. There have been a number of changes to the way in which alcohol and drug treatment services have been commissioned and provided in England [43–45], including an increased focus on alcohol interventions, the integration of alcohol and drug services, and a new focus on supporting people to become abstinent as part of the recovery agenda. Within integrated treatment services (as the majority in England now are) there may be some pooling of alcohol and drug funding to support particular aspects of service delivery for example pharmacotherapy, or diversion of resource from alcohol to drug treatment. This may explain our finding that whilst alcohol treatment spend was fairly stable, compared to drug treatment spend, there were significant decreases in the numbers accessing and successfully completing treatment for both groups.

Conclusions

Between 2013/2014 and 2018/2019, there was a 27% reduction in the amount of local authority investment

in adult substance use treatment services in England. We estimate that the overall disinvestment of £212.21 million between 2013/2014 and 2018/2019 was related to 6430 fewer people accessing treatment, and 4350 fewer successfully completing treatment for substance use.

Conflict of Interest

The authors have no conflicts of interest.

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APPENDIX

Table A1. *Linear mixed-effects modelled relationship between disinvestment, treatment and health outcomes 2013/14 to 2018/19, including non-opiate and alcohol cohort within binary split*

Per £10 000 disinvestment from:	Outcomes	All local authorities (excluding non-opiate and alcohol)			All local authorities (including non-opiate and alcohol)		
		β coefficient	SE	*P*-value	β coefficient	SE	*P*-value
Alcohol treatment[a]	Numbers in treatment	−0.102	0.059	0.083	0.086	0.075	0.251
	Numbers new to treatment	−0.041	0.045	0.365	0.026	0.056	0.647
	Number of successful completions	−0.071	0.035	0.043	0.070	0.044	0.108
	Number of successful completions and not return within 6 months	−0.067	0.033	0.044	0.070	0.042	0.094
Drug treatment[a]	Numbers in treatment	−0.133	0.027	<0.001	0.135	0.033	<0.001
	Numbers new to treatment	−0.106	0.019	<0.001	0.102	0.026	<0.001
	Number of successful completions	−0.060	0.014	<0.001	0.070	0.018	<0.001
	Number of successful completions and not return within 6 months	−0.072	0.014	<0.001	0.082	0.018	<0.001

[a]Including non-opiate and alcohol cohort in binary split.