Office for National Statistics

Statistical bulletin

The impact of NHS Talking Therapies on monthly employee pay and employment status, England: April 2014 to December 2022

The change in monthly employee pay and employee status attributable to completing NHS Talking Therapies treatment in different time periods after therapy, compared with one year before first therapy.

Table of contents

1 . Main points

- NHS Talking Therapies (NHSTT) is a primary mental health service offering evidence-based psychological therapies for people suffering with common mental disorders like anxiety and depression.

- NHSTT treatment completion was associated with a sustained improvement in labour market outcomes, compared with one year before first therapy; the probability of being a paid employee within seven years of starting treatment increased to a maximum of a 1.5 percentage points, and monthly employee pay two years after treatment increased by a maximum of £17.

- Individuals who were not working but seeking work (unemployed) at the time of referral benefited the most from completing NHSTT treatment; the probability of being a paid employee four years after completing therapy increased to a maximum of 3.1 percentage points.

- Individuals aged between 25 and 34 years and between 35 and 44 years experienced the biggest increases in the probability of being paid employee following completion of NHSTT treatment; the probability increased 2.3 percentage points by year seven for those aged 25 to 34 years and 2.0 percentage points by year five for those aged 35 to 44 years.

- Only Asian and White ethnic groups had statistically significant positive changes in monthly employee pay and probability of being a paid employee after completing NHSTT treatment, when compared with the one year before the first therapy.

- Recovery or improvement of mental health symptoms was associated with a statistically significant increased probability of being a paid employee (1.0 percentage point).

All the datasets used for this analysis have been de-identified in a secure virtual environment before they are combined and analysed. In line with the Code of Practice for Statistics, the de-identified linked data will only be used for statistical production and research. Read more in Section 5: Data sources and quality.

2 . Results of the analysis

We used fixed effect regression modelling to estimate average changes in monthly employee earnings and the probability of being a paid employee.

We estimated the effects of completing NHS Talking Therapies (NHSTT) treatment, compared with the year before treatment. We included data for people who dropped out of treatment to account for time-varying factors, such as ageing and changes in background economic conditions, that might be related to the labour market effect of treatment. Following this, we assessed whether the labour market effects of treatment completion varied between different sociodemographic groups.

Individuals who drop out of treatment or do not recover might be systematically different from people who complete treatment or recover. To account for observed differences between these groups, we used inverse probability weights to improve comparability. See Section 4: Glossary for definitions of terms used in this bulletin.

Effects of completing NHSTT treatment on the labour market

There were 842,127 individuals in our study population, of which 593,300 (70.5%) completed scheduled treatment and 248,827 (29.5%) were referred but dropped out of treatment. Our study population had a mean age of 41 years and was mainly female (66.9%), from a white ethnic background (90.1%), with a diagnosis of depression (38.3%) or anxiety (24.1%), and who self-referred to NHSTT (73.7%).

There were statistically significant effects of completing NHSTT treatment on monthly employee pay and probability of being a paid employee. Monthly employee pay reached a maximum increase of £17 in year two, compared with the year before treatment. The increase remained significant at £11 six years after treatment, and the effect was not significant by year seven because of a reduced sample size (Figure 1). The increase in the probability of being a paid employee reached 1.5 percentage points at year seven after first therapy.

Figure 1: There is a sustained increase in the probability of being a paid employee from two to seven years after first therapy

Changes in monthly employee pay and the probability of being a paid employee, compared with one year before first therapy, 25- to 60-year-olds who completed NHS Talking Therapies treatment between 1 April 2014 and 31 December 2022, England

Notes

1. Data include individuals who had a referral to NHS Talking Therapies between 1 April 2016 and 31 March 2020, attended at least one therapy session, had clinical caseness, were between the ages of 25 and 60 years on the day of the referral, and were resident in England.

2. Pay is gross monthly earnings paid to employees, in 2023 equivalent values.

3. We define being a paid employee as receiving a monthly pay greater than £0.

4. The error bars show 95% confidence limits.

5. Outcomes for each time period are compared with the one-year period before the first therapy, including the quarter when therapy took place.

Breakdowns by sociodemographic characteristics

The largest effect was found in those aged 25 to 34 years and those aged 35 to 44 years, compared with the one year before the first therapy. Monthly employee pay reached a maximum of £46 more per month for individuals aged 35 to 44 years by year six, and £32 more per month for individuals aged 25 to 34 years by year three. The increase in the probability of being a paid employee reached maximum of 2.3 percentage points for 25- to 34-year-olds by year seven, and 2.0 percentage points for 35-to 44-year-olds by year five. There was no statistically significant effect for individuals aged 55 to 60 years.

Individuals who were not working but seeking work (unemployed) at the beginning of the therapy had the highest positive changes in their monthly employee pay and probability of being a paid employee. The effect reached a maximum of £63 in monthly employee pay by year seven, which had the largest year effect. There was a 3.1 percentage point increase in the probability of being a paid employee at year four. The increase continued to be significantly higher than the year before therapy at 3.0 percentage points by year seven (Figure 2).

Individuals who were not working and not seeking work (economically inactive) at the beginning of therapy also had an increase in monthly employee pay and the probability of being a paid employee. There was an increase of £16 more per month by year four, which was the only statistically significant year, and 1.5 percentage points by year four, which was the largest year effect.

Figure 2: Individuals not working but seeking work (unemployed) saw the largest effects on monthly employee pay and probability of being a paid employee

Changes in monthly employee pay and the probability of being a paid employee, compared with one year before first therapy, 25- to 60-year-olds who completed NHS Talking Therapies treatment between 1 April 2014 and 31 December 2022, England

Notes

1. Data include individuals who had a referral to NHS Talking Therapies between 1 April 2016 and 31 March 2020, attended at least one therapy session, had clinical caseness, were between the ages of 25 and 60 years on the day of the referral, and were resident in England.

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4. The error bars show 95% confidence limits.

5. Outcomes for each time period are compared with the one-year period before the first therapy, including the quarter when therapy took place.

For both females and males, monthly employee pay was highest in year three. There was an increase of £16 for females and £25 for males. The probability of being a paid employee was highest in year seven for both sexes, compared with the one year before the first therapy. The effect reached 1.4 percentage points for males and 1.5 percentage points for females.

Completing NHSTT treatment had statistically significant effects on monthly employee pay and the probability of being a paid employee for Asian and White ethnic groups. Monthly employee pay reached a maximum of £39 in year three for the Asian ethnic group and £17 more in year two for the White ethnic group. The increase in the probability of being a paid employee reached a maximum of 1.7 percentage points at year three for the Asian ethnic group and 1.5 percentage points at year four for the White ethnic group. There were no statistically significant effects on monthly employee pay or the probability of being a paid employee for Black, Mixed or Other ethnic groups.

Completing NHSTT with improvement in, or recovery from, mental health symptoms resulted in a maximum increase of £9 for monthly employee pay by year two and a 1.0 percentage point increase in the probability of being a paid employee by year three after first therapy. No change or a deterioration in mental health symptoms was associated with monthly employee pay decreasing by £24 by year five. It also was associated with a decreased probability of being a paid employee of negative 0.8 percentage points by five years after the first therapy.

Further sociodemographic breakdowns can be found in the [accompanying dataset](#).

3 . Data on the impact of NHS Talking Therapies on monthly employee pay and employment status

[The impact of NHS Talking Therapies on monthly employee pay and employment status, England](#)
Dataset | Released 9 December 2024
Estimates of changes in monthly employee pay and employment status attributable to completing NHS Talking Therapies treatment, in different time periods after first therapy, compared to one year before first therapy.

4 . Glossary

Calendar quarters

Quarters are defined using calendar months. Quarter 1 is Jan to Mar, Quarter 2 is Apr to June, Quarter 3 is July to Sept, and Quarter 4 is Oct to Dec.

Clinical caseness

This refers to a patient who has symptoms of a mental health disorder above a defined threshold. This is measured using several screening questionnaires, such as the Generalised Anxiety Disorder (GAD-7) questionnaire or the Patient Health Questionnaire (PHQ-9). More information on caseness can be found in the NHS Talking Therapies for anxiety and depression Manual (PDF, 8.0MB).

Treatment outcomes

NHS England categorise mental health therapy treatment outcomes into four groups: recovery, improvement, deterioration, or no change. These are based on the results from a screening questionnaire that patients complete at the beginning and end of treatment.

NHS Talking Therapies

The NHS Talking Therapies (NHSTT) programme is a primary mental health service in England that provides psychological talking therapies for adults with anxiety and depression disorders. Patients need to be registered with a general practitioner (GP) in England to access the services, but they do not need referral from the GP to access it.

NHSTT offers different types of treatments, such as self-help books, mindfulness, counselling, cognitive behavioural therapy (CBT). All therapies follow National Institute for Health and Care Excellence (NICE) guidelines and are evidence-based. More information can be found on the NHS webpage on NHS Talking Therapies for anxiety and depression.

Fixed effect regression

We have described the fixed effect regression we use in Section 4: Glossary of our The impact of bariatric surgery on monthly employee pay and employee status, England: April 2014 to December 2022.

Inverse probability weighting

People who complete NHSTT treatment may be systematically different to those who do not complete treatment. These differences may be related to their labour market prospects. This increases the risk that the effects of the NHSTT programme can be attributed not just to the intervention but also to these other confounding factors. To reduce the risk of this, we use inverse probability weighting (IPW).

IPW involves estimating the probability of completing treatment given an individual's characteristics. We calculate weights for each individual as the inverse probability of being in the group (completed or did not complete treatment) that the individual was actually in using this formula.

$$IPW = 1/P(exposed\_group_i) \, if \, exposed\_group_i = 1$$
$$1/(1 - P(exposed\_group_i) \, if \, exposed\_group_i = 0$$

5 . Data sources and quality

Linked datasets

We used an extension of the Public Health Data Asset (PHDA) to include data on employee pay. The de-identified, linked panel dataset includes data from:

- Census 2011

- NHS Talking Therapies referrals received between 1 April 2016 to 31 March 2020

- Office for National Statistics (ONS) death registrations, covering deaths registered from 1 April 2014 to 31 December 2023 and occurring up to 31 December 2022

- Pay As You Earn (PAYE) Real-Time information (RTI) records from HM Revenue and Customs (HMRC) covering 1 April 2014 to 31 December 2022

We describe the data security processes we use in our National Statistical blog Using the power of linked data to understand factors preventing people from working. Information on how and why we de-identify the datasets used in this analysis is described in our The impact of bariatric surgery on monthly employee pay and employee status, England: April 2014 to December 2022 bulletin.

We linked Census IDs to HMRC records via the Demographic Index (PDF, 549KB). We have published a report detailing this in our 2011 Census linkage to DWP master key and encrypted NINo methodology.

We linked Census IDs to the NHSTT and death registration datasets using the Patient Register (PR) 2011 to 2013 for the Census 2011. Individuals were required to have a census record that could be linked to NHS and HMRC information to be included in the study dataset.

The PAYE data were calendarised in line with the methods described in our Monthly earnings and employment estimates from Pay As You Earn Real Time Information (PAYE RTI) data: methods to derive monthly employee pay. More information on this can be found in our Explaining income and earnings: important questions answered methodology. Where an individual had a Census ID linking to multiple monthly PAYE records, pay was summed across all matching records for each month.

Negative monthly employee pay records were imputed to be zero. Monthly employee pay above the 99.9% centile was set to the value at the 99.9% centile. Monthly employee pay was deflated to 2023 prices using our Consumer Price Index including owner occupier's housing costs (CPIH) dataset. We defined being a paid employee as receiving any amount of pay in a month.

Inclusion criteria

Individuals were included if they had a record (Census ID) in Census 2011 and had valid NHS and National Insurance number (NINo) linked to their Census ID.

The population was then restricted to individuals who:

- had a referral to NHSTT between 1 April 2016 and 31 March 2020

- attended at least one therapy session

- were at clinical caseness

- were aged 25 to 60 years old on the day of the referral

- were resident in England

We removed participants who died in the same quarter as the referral and those who reported being retired when they were referred to NHSTT. For participants with multiple referrals meeting these criteria, we selected the earliest one.

Exposure groups

We used the reason for termination of the referral in NHSTT to construct our initial exposed and non-exposed groups. The exposed group included participants who completed scheduled treatment. The non-exposed group included participants who were suitable for NHSTT, but refused treatment that was offered or dropped out of treatment after starting it.

Follow up

The HMRC PAYE dataset covers 1 April 2014 to 31 December 2022. Individuals were followed-up for up to four years before the first therapy and up to seven years after the first therapy. The post-therapy follow-up was stopped from the earliest point of time at which one of the following occurred:

- the study period ended

- the participant reached 64 years of age

- the participant's death

Pre-therapy follow-up was stopped when participants were under 21 years of age.

The average follow-up pre-treatment for the completed treatment group was 15.2 calendar quarters of a maximum of 25 quarters. The average follow-up post-treatment was 18.7 quarters of a maximum 26 quarters. For the dropped out of treatment group, the average follow-up time was 15.3 quarters pre-treatment and 18.6 quarters post-treatment.

Quality

The quality of PHDA and HMRC PAYE datasets are described in Section 5: Data sources and quality of our [The impact of bariatric surgery on monthly employee pay and employee status, England: April 2014 to December 2022 article](#).

Acknowledgements

6 . Related links

[The impact of bariatric surgery on monthly employee pay and employee status, England: April 2014 to December 2022](#)
Article | Released 23 October 2024
The change in monthly employee pay and employee status attributable to having had bariatric surgery, in different time periods after surgery, compared with six months before surgery.

[Using the power of linked data to understand factors preventing people from working](#)
Blog | Released 1 October 2023
How linked, population-level data can improve our understanding of the interplay between health and work, with the goal of improving the wellbeing of individuals and the economy.

[Labour market overview, UK](#)
Bulletin | Released monthly
Estimates of employment, unemployment, economic inactivity and other employment-related statistics for the UK.

[Rising ill-health and economic inactivity because of long-term sickness, UK: 2019 to 2023](#)
Article | Released 26 July 2023
Experimental statistics estimating the different health conditions of the working-age population and those economically inactive because of long-term sickness.

7 . Cite this statistical bulletin

Office for National Statistics (ONS), released 9 December 2024, ONS website, statistical bulletin, [The impact of NHS Talking Therapies on monthly employee pay and employment status, England: April 2014 to December 2022](#)