(Not) talking through our mental problems

The impact of talk therapy on healthcare utilization and employment

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February 13, 2025

Preliminary: Do not cite or distribute

Abstract

Mental health disorders account for one in six years lived in disability worldwide, translating into a substantial economic burden to the world economy. Cognitive behavioral (talk) therapy is often the first line of treatment for these health disorders. Using administrative data and exploiting a policy reform in the Netherlands that introduced an easily accessible form of talk therapy at general practitioner offices, I examine the causal impact of talk therapy on healthcare utilization and labour market outcomes. Although the reform significantly increased treatment uptake, it also increased existing disparities in healthcare utilization. Additionally, there are no improvements in a wide range of patient labour market outcomes.

Keywords: Mental health treatment, Talk therapy, Labour supply

JEL: J08, I1, J22

*Affiliation: Lancaster University. Contact: r.prudon@lancaster.ac.uk. I am grateful for useful comments of participants at the Essen Health Economics Seminar Series... . I gratefully acknowledge the financial support from NWO for this research project. The results in this paper are based on non-public microdata from Statistics Netherlands (CBS) and Nivel. In principle, these microdata are accessible for statistical and scientific research. For further information: microdata@cbs.nl. This study has been approved according to the governance code of Nivel Primary Care Database, under number NZR-00324.04. The use of electronic health records for research purposes is allowed under certain conditions. When these conditions are fulfilled, neither obtaining informed consent from patients nor approval by a medical ethics committee is obligatory for this type of observational studies containing no directly identifiable data (art. 24 GDPR Implementation Act jo art. 9.2 sub j GDPR).

1 Introduction

Recent estimates show that approximately one in eight people worldwide live with a mental disorder (WHO, 2022). Given the significant impact mental health disorders can have on individuals' labour market outcomes, the substantial health burden of mental disorders also translates into substantial economic losses. In 2010, the economic burden of mental health on the world economy was estimated at 2.5 trillion, approximately 5% of the world GDP. This economic burden is predicted to grow to 6 trillion by 2030 (Lancet, 2020).

Given this large impact of mental health disorders, adequate treatment of these disorders could potentially lead to significant gains for society. The medical literature has established the effectiveness of treatments in reducing the health burden of mental disorders (Hofmann et al., 2012). However, a large share of individuals suffering from mental health disorders do not receive (adequate) treatment. This is especially true among disadvantaged groups such as those with a migration background (Sentell et al., 2007).

Additionally, little is known about the impact of mental health treatment on the economic burden of mental health disorders (NIMH, 2024). Two important exceptions are studies by Biasi et al. (2021) and Shapiro (2022), showing the causal impact of the availability of lithium as a treatment for bipolar disease and antidepressants as a treatment for depression. Both of these studies find sizeable impacts of the availability of treatment on employment, earnings and sickness days. While informative on the economic gains of mental health treatment, both studies concern the pharmaceutical treatment of mental health disorders. For most mental health disorders, pharmaceuticals are however only used as a second line of treatment, while cognitive behavioural therapy (more commonly referred to as talk therapy) is used as the first line of treatment. Little is known about the economic impacts of this first line of treatment because, unlike pharmaceuticals, exogenous variation in the availability of talk therapy is scarce.

This paper aims to shed more light on the impact of talk therapy by examining a reform in the Netherlands that introduced an easily accessible form of talk therapy at general practitioner (GP) offices. As a first step, I determine whether introducing

this type of treatment significantly increased treatment uptake. As a second step, I assess whether talk therapy effectively reduces the economic burden of mental health disorders by estimating the causal impact of talk therapy on a wide range of patient labour market outcomes. Given the large disparities in the uptake of mental healthcare, I lastly examine whether the introduction of talk therapy has been successful in reducing the gap in treatment uptake between various subgroups of the population.

To estimate causal impacts on healthcare utilization and labour market outcomes, I exploit exogenous variation in the probability of receiving talk therapy driven by introducing this type of talk therapy. Using a (difference-in-)Regression Discontinuity (RD) strategy, I find that patients contacting their GP for mental health-related reasons are approximately 10 percentage points more likely to receive some form of mental healthcare after the introduction of this policy. There is no significant impact on the receipt of alternative (already-existing) mental healthcare treatment options. Talk therapy at GP offices thus complements the already existing treatment options, as patients receiving talk therapy would not have received an alternative type of treatment in the absence of the talk therapy option.

Despite this substantial uptake of talk therapy at GP offices, I find no significant impacts on a wide range of patient labour market outcomes. After the introduction of talk therapy at GP offices, patients seeking care are not more likely to be employed, do not have higher labour earnings and are not less likely to receive various types of social benefits. This holds both in the short and long run, as labour market outcomes are unaffected up to 8 years after treatment has commenced.

The final question that remains is whether, despite this lack of labour market improvements, the introduction of talk therapy at GP offices has reduced some of the existing disparities in healthcare utilization. To this extent, I estimate healthcare disparities using administrative data on healthcare utilization as previously done by Sentell et al. (2007); Cook et al. (2017). Contrary to these studies that focus on the US, I find that in the Netherlands individuals with a migration background and those with lower educational attainment are more likely to use mental healthcare than those without a migration

background or higher educational attainment. However, these differences in healthcare utilization rates do not account for potential differences in healthcare needs. When controlling for self-reported health (obtained through a large-scale survey), the magnitude changes and in some cases even the sign of the healthcare disparities flips. To estimate disparities in healthcare utilization, both use of and need for healthcare should be thus incorporated. When doing so, I find that older individuals, males, those with a migration background or those with lower educational attainment use disproportionately less mental healthcare.

With these disparities in mind, I estimate heterogeneity in the impact of introducing talk therapy at GP offices. Younger individuals (under 45), females, and those with a migration background or higher education level are much more likely to take up this new form of treatment. With the exception of individuals with a migration background, these groups already had a relatively high utilization of mental healthcare prior to the introduction of talk therapy at GP offices. This implies that the increased treatment uptake increased existing healthcare disparities. An important exception to this is non-natives, who were significantly less likely to use mental healthcare prior to the introduction but benefited the most from the introduction.

This paper is most closely related to a strand of literature examining differences in mental health treatment uptake. Studies in the US have identified significant disparities in treatment uptake, with disadvantaged groups being up to 80% less likely to seek mental healthcare. Language barriers, such as limited English proficiency, are a primary factor driving this reduced access (Sentell et al., 2007; Cook et al., 2017). This paper provides three crucial contributions to this literature. First of all, I estimate differences in the uptake of mental healthcare in the Netherlands and show that contrary to the findings by (Sentell et al., 2007; Cook et al., 2017), disadvantaged groups such as those with a migration background are more likely to use care compared to individuals without a migration background. However, as a second contribution, I show that incorporating the need for mental healthcare can greatly affect both the magnitude and the sign of the estimated disparities. As a third contribution, I show that introducing an easily

accessible form of treatment, in this case through offering talk therapy at GP offices, does not necessarily decrease disparities in healthcare utilization. While talk therapy reduced the existing treatment gap between natives and non-natives, it has widened the treatment gap based on the age, gender and education level of individuals suffering from mental health problems.

Additionally, the findings of this study contribute to the literature on the causal impact of mental health treatment on employment outcomes. In contrast to this paper, the three primary papers in this literature have found significant improvements in labour market outcomes due to mental healthcare treatment. Biasi et al. (2021) finds that lithium reduces the negative earnings penalty of bipolar disease by one-third, or approximately 10 percentage points. Similarly, Prudon (2023) finds that if individuals have to wait one additional month before treatment commences, their employment rate drops by two percentage points. Lastly, Shapiro (2022) finds that a 10% increase in advertising for antidepressants leads to a 0.3% rise in prescriptions. Assuming all labour supply impacts run through prescriptions, using antidepressants would reduce the number of missed days at work by almost 4 days per month. The measure most closely related to missed days at work available in Dutch administrative data is the take-up of (short-term) sickness benefits. In contrast to the results by Shapiro (2022), talk therapy does not significantly impact the take-up of sickness benefits.

One potential explanation for the lack of labour market improvements is that the mental health problems of patients being treated at GP offices are arguably less severe than the samples considered in previous studies. It is unlikely that this fully explains the null results for labour market outcomes as the patients receiving talk therapy at GP offices do experience a deterioration of their employment status around the moment they seek treatment. Specifically, patients who will receive talk therapy at the GP office experience a drop in the probability of employment of five percentage points around the moment they contact their GP. This is similar to the drop in employment for patients treated at basic mental healthcare facilities and half of the drop experienced by patients treated at specialized mental healthcare facilities (This group is similar to the sample in

Prudon (2023)). While these drops should not be interpreted as the causal impact of mental health problems, they are indicative of the severity of the problems and do point to the potential of labour market gains through treatment.

Lastly, the results contribute more broadly to research on the impact of mental health problems on employment. This literature highlights that mental health issues significantly reduce employment outcomes. Early studies, using cross-sectional data with instruments related to early-life events such as parental psychological problems, religiosity, social support, and past mental health, estimated a 10 to 30 percentage point decline in employment (Ettner et al., 1997; Chatterji et al., 2011; Hamilton et al., 1997; Ojeda et al., 2010; Chatterji et al., 2007; Alexandre & French, 2001; Marcotte et al., 2000). However, these instruments risk bias as early-life events may also affect traits like motivation. Addressing this, Frijters et al. (2014) used panel data with the death of a friend as an instrument, showing that a one standard deviation decline in mental health reduces employment probability by 30 percentage points despite the instrument's modest impact on mental health (0.04 standard deviation). This paper shows that not all forms of mental health treatment protect against these negative employment impacts.

Summing up, the introduction of talk therapy at GP offices in the Netherlands has significantly increased treatment uptake. However, the results highlight that given the broadness of mental health disorders and the variability in treatment options available, the effectiveness of treatment in terms of labour market improvements is not a guarantee. Additional efforts are required to reduce the economic impact of mental health problems and close existing disparities in mental healthcare utilization.

In the remainder of this paper, the Dutch institutional setup of mental healthcare and the setup of the talk therapy reform specifically are discussed in Section 2. Section 3 presents the data used and descriptive statistics for the sample of interest. The main empirical results are presented in Section 4 and finally, Section 6 concludes.

2 Mental healthcare in the Netherlands

2.1 Prior to the reform

In the Netherlands, the General Practitioner (GP) is the gatekeeper to the healthcare system. In almost all cases, individuals must first see a GP to be referredspecializedized care. Unless there is an urgent situation, individuals can only go to the GP office where they are registered, and this GP office must be located close to where they live.

All costs related to care provided by GP offices are covered by mandatory basic health insurance without any copayments or deductibles. If GPs refer patientsspecializedized care, copayments might be required. Additionally, there is an annual deductible of €385 for specialized care.[1] Given the extensive coverage of basic health insurance and its mandatory nature, private provision of care in the Netherlands is limited.

If an individual faces health issues, they must contact their GP in order to receive a referral for further care. In the case of mental health problems, GPs make a first assessment of the severity of the mental health problems after which they have various treatment options to refer to. If a GP deems the mental health problems very limited, they can decide not to refer to any treatment and potentially ask their patients to return after a certain period of time to check on the mental health problems. If the mental health problems are more severe, GPs can refer patients to either basic mental healthcarespecializedized mental healthcare. Basic mental healthcare is focused on "singular" mental health disorders, whspecializedized mental healthcare is aimed at more complex cases. Alongside these various referral options, GPs can decide to prescribe pharmaceuticals. Their medical guidelines do however state that they should do so "with caution".

2.2 After the reform

In order to alleviate pressure from the basic specializedized mental healthcare systems and to increase the uptake of treatment for mental health in general, the Dutch government decided to expand the treatment options available to patients from 2011 onwards. Since

[1] The annual deductible has increased over time, and individuals can opt for a higher deductible of up to €885 in exchange for a reduction in their health insurance premium.

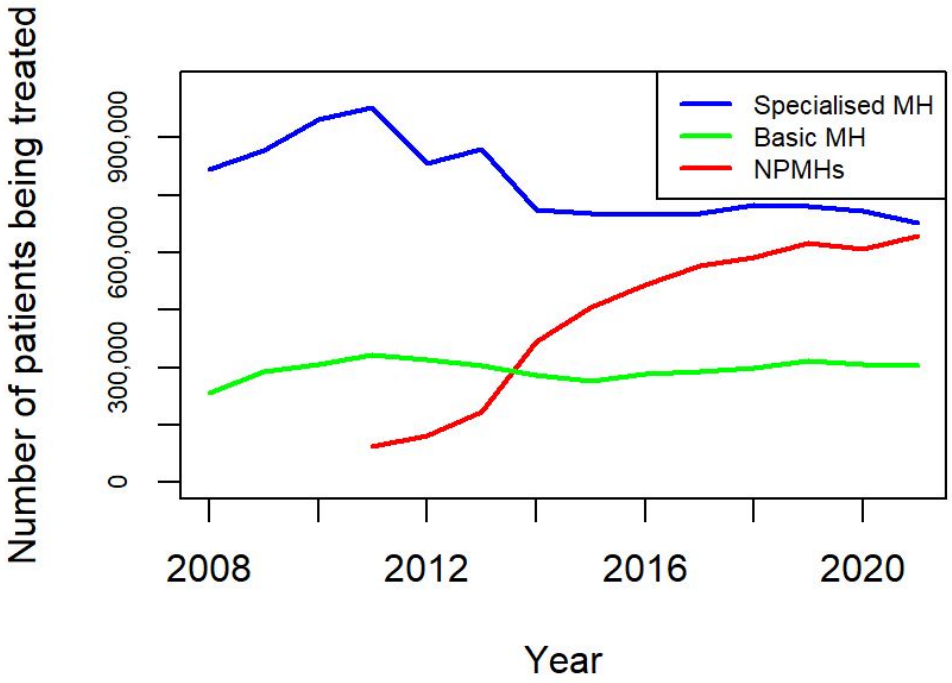
2011, GP offices can decide to hire nurse practitionspecializedized in mental healthcare (NPMHs). These NPMHs are most often not medical doctors but they are required to have a 4-year nursing degree (or equivalent) and at least 2 years of mental health-related work experience. If individuals meet these requirements, they can follow a one-year program, which includes an internship at a GP office for at least 1 day per week, to receive their NPMH accreditation. Given that these NPMHs are not medical doctors, they are not allowed to prescribe pharmaceuticals. They do however provide various forms of cognitive behavioral therapy/talk therapy. In consultation with the NPMH, GPs can decide to prescribe pharmaceuticals to patients being treated by the NPMH.

This form of talk therapy at GP offices was first covered by basic health insurance in the Netherlands in 2011. At that moment, GP offices could receive funding for 9 hours per week for every 2350 patients registered at the office. Since the initial introduction in 2012, funding available has steadily increased over the years to 16 hours per week for every 2350 patients in 2024. As the amount of funding available has increased, the number of GP offices that offer this type of treatment has also increased. The treatment provided by NPMHs is provided at the GP office, which implies that contrary to for baspecializedised mental healthcare, patients do not pay any copayments when being treated by an NPMH.

To illustrate the gradual expansion of NPMH treatment, Figure 1 shows the number of patients being treated each year in basic mental healthcaspecializedised mental health and by NPMHs at GP offices. As can be seen from the figure, the number of patients in both basic specializedised mental healthcare has been fairly stable at 300,000 and 700,000 respectively. At the same time, the number of patients being seen by NPMHS has grown substantially from 95,000 in 2011 to over 600,000 in 2021.

Over the period 2008 to 2021, the total amount of patients being treated for mental health problems has substantially increased from approximately one million to over 1.6 million. This stark increase is almost fully driven by treatment provided by NPMHs which could indicate that treatment by NPMHs acts as a complement and not a substitute to these already existing treatment options. This would partly contradict the initial aim

Figure 1: Number of patients being treated per year for each type of mental healthcare treatment



of introduction of NPMHs as a way of reducing pressure on the basic specializedised mental healthcare system. Section 4.1 will examine this question of complementarity or substitutionality to already existing care options in more detail.

3 Data

To assess the impact of talk therapy provided at GP offices, several administrative data sources from various providers are merged to obtain individual-level information on healthcare utilization, labour market outcomes and background characteristics. Linkage of all datasets was done usanonymizedized citizen service numbers. The next subsections first discuss the various datasets, after which descriptive statistics are shown in Subsection 3.4

3.1 Data on healthcare provided at GP offices

Detailed data on healthcare provided at GP offices is unfortunately not available in the standard administrative datasets of the Netherlands. I therefore use data provided by

Nivel, which is an association of GP offices in the Netherlands. There are currently approximately 500 GP offices affiliated with Nivel, covering 10% of the entire Dutch population. While not a random sample, the population served by Nivel affiliated GP offices is representative of the Dutch population in terms of a wide range of background characteristics.

Nivel has provided data on all mental-health related GP consultations between 2011 and 2021. For these consultations, I observe patient and GP office identifiers, the exact date and the reason for the consultation. Additionally, Nivel has provided the same data for all consultations done by NPMHs. This makes it possible to construct time series for treatment by NPMHs both at the individual level and the practice level.

It is important to note that GP offices can (and in some cases do) start their affiliation with Nivel after the start of the observation window (2011) or terminate their affiliation with Nivel. Additionally, patients can move GPs when they relocate to a different municipality. In both of these cases, once a patient is registered at a GP office data on healthcare provided at the GP office is missing. All remaining administrative data discussed below is however still available and linkable for these patients.

3.2 Data on (mental) healthcare

The data on healthcare provided at GP offices is complemented with a dataset provided by Statistics Netherlands showing annual healthcare expenditures covered by basic health insurance from 2009 to 2020. These expenditures categorizedized into subcategories, enabling a distinction between expenditures at GP offices (combines both GP and NPMH care), expenditures for basic mental healthcaspecializedised mental healthcare, pharmaceuticals and non-mental healthcare spending.[2] This data source is used to create an annual time series on the utilization of the various types of healthcare.

While covering all types of healthcare, the main downside with the data on expenditures is its annual nature and limited level of detail. specializedised mental healthcare, I therefore use an additional dataset obtained through the health insurance system which

[2]Refer to Online Appendix Section **??** for the classification of healthcare spending categories.

contains information on a more granular level. More specifically, this data source contains information on all treatment-related eventsspecializedized mental healthcare that took place between 2011 and 2021. Mental healthcare treatment is defined as any in-person or virtual interaction with a mental healthcare provider. For each event, the dataset includes details such as the exact event date, event type (e.g., initial contact, intake, treatment, administrative), the duration of patient contact in minutes, the mental health diagnosis, the category of treatment provider (psychologist, psychiatrist, psychotherapist, or other), anonymizedized identifiers for both the patient and the provider.

Lastly, the healthcare data is supplemented with detailed information on the use of pharmaceuticals for mental health-related diagnoses. This dataset includes all individual prescriptions covered by basic health insurance for a selection of ATC-4 code medications, along with the dates the prescriptions were filled. The data covers seven drug categories: (1) antidepressants, (2) antipsychotics, (3) anxiolytics, (4) hypnotics, (5) psychostimulants, (6) medications for addictive disorders, and (7) opioids.[3] Prescriptions are included in the dataset if issued by a general practitioner (GP) or a mental healthcare provider. Combining these four different datasets yields individual-level monthly time series on all available treatment options for mental healthcare in the Netherlands for a sample of individuals who contact their GP for a mental health-related reason.[4]

To have measures of healthcare utilization and healthcare needs, a large survey is merged into the administrative datasets. This survey, the Health Monitor (Gezondheidsmonitor), is administered by Statistics Netherlands every four years starting in 2012 and covers a representative sample of approximately 400.000 respondents (2% of the full Dutch population). The survey contains a wide range of health and healthcare questions. Most important for this paper, it contains questions about self-reported mental well-being and measures tsummarizerize the risk of the most frequent mental health disorders such as anxiety and depression.[5] Combining information on healthcare utilization

[3]The corresponding ATC-4 codes are N02A, N05A, N05B, N05C, N06A, N06B, and N07B.

[4]The only exception to this is the use of basic mental healthcare, for which only annual time series are available.

[5]The survey contains both the underlying questions to compute these risk measures, and the risk measures themselves.

and the survey measures on healthcare needs yields a proxy for the gap in treatment uptake for various groups of the population. This will be used in heterogeneity analysis to determine whether the reform has partly closed or widened the treatment gap between different groups.

3.3 Data on labour market outcomes and other characteristics

The healthcare data is finally merged with the data on labour market outcomes. The labour market outcomes in the sample include monthly metrics for employment, labour earnings, working hours, and the receipt of unemployment benefits, sickness/disability benefits, and social assistance. The labour market panel covers the period from 2006 to 2023, with data on monthly labour earnings and working hours available starting in 2009. For most analyses, time series are aligned relative to the initial contact with a GP. Individuals are tracked from eight years before the initial contact with a GP to ten years after, resulting in an unbalanced panel.

The panel data on health and labour market outcomes is supplemented with administrative records from Statistics Netherlands, which include information on date of birth, gender, migration background, educational attainment, and municipality of residence.

3.4 Descriptive statistics

The Nivel sample is comprised of 925,654 individuals who first contacted their GP for a mental health-related reason between 2012 and 2021. 153,286 of these individuals received treatment by an NPMH at the GP office within the first after contacting their GP. Note that individuals first contacting their GP in 2011 are excluded, as for these individuals, it cannot be determined whether they already contacted their GP/received care from their GP for a mental health-related reason in the year prior. Descriptive statistics for the sample contacting their GP and the subsample receiving care from an NPMH are shown in columns (2) and (3) of Table 1. As a point of comparison, column (1) shows descriptive statistics for the full Dutch population.

The descriptive statistics show several interesting differences and similarities between

Table 1: Descriptive statistics of the general Dutch population, the sample contacting their GP for the first time, and the sample receiving treatment from an NPMH

	General population[a]	Sample first contacting GP[b]	Sample treated by NPMH[c]
Demographics[d]:			
Age	45.4	42.8	39.7
Male	49.9%	44.3%	38.4%
Dutch native	76.4%	77.7%	77.7%
Education unknown[e]	49.3%	35.2%	25.5%
Education[f]:			
Low	29.6%	34.0%	21.6%
Middle	38.0%	37.4%	44.7%
High	32.4%	28.6%	33.6%
Annual healthcare (expenditures)[g]**:**			
GP cost	€136.25	€175.57	€172.96
Share using basic MH	1.6%	2.2%	1.7%
Basic MH expenditures	€3.93	€13.96	€11.37
Share using specialised MH	3.8%	6.6%	3.8%
Specialised MH expenditures	€173.14	€416.09	€173.00
Pharmaceuticals	€36.80	€54.39	€34.83
Physical healthcare	€984.52	€1707.82	€1382.87
Number of individuals	20,633,684	925,654	153,286
Survey measures on health[h]**:**			
Self-reported health[i]	2.2	2.3	2.2
High risk of psychological disorder	4.7%	7.7%	9.1%
High risk for anxiety and depression	38.8%	49.0%	53.8%
High risk for loneliness	7.7%	10.6%	11.9%
Number of individuals	365,281	20,957	3,006

(a) Full Dutch population in January 2012; (b) Sample first contacting their NIVEL GP for a mental health-related reason between January 2012 and December 2021; (c) Sample being referred to an NPMH within the first year of contacting their GP; (d) Demographics on January 2012 for the general population or in the year of first contacting their GP for remaining two samples; (e) The large percentage of unknown education level in the general population is because the Dutch education registry started in the 1980s. The education level is unknown for most individuals in cohorts who graduated earlier. The difference in unknown education level between the general population and the other two samples is driven by the age difference; (f) Education level if known; (g) Yearly healthcare expenditures in 2012 for the general population or in the year before first contacting their GP for the remaining two samples; (h) Survey measures in the 2012 survey wave of the health monitor are available for approximately 2% of the sample. The survey only includes individuals aged 18 or above; (i) Self-reported health is measured on a 5-point Likert scale, with 1 being excellent health.

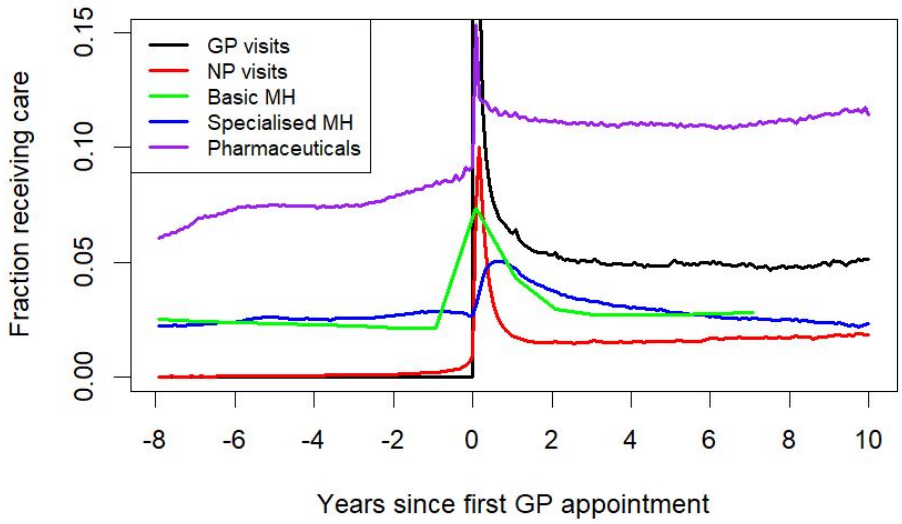
the three samples. First of all, individuals seeking care for mental health-related reasons tend to be younger on average, which is in line with the fact that the onset of many mental health problems is at a relatively young age. Additionally, females are significantly more likely to seek from their GP, and receive treatment from an NPMH. For educational education, a slightly different pattern emerges as high education individuals are less likely to contact their GP, but more likely to receive treatment from an NPMH. Contrary to what is often found in other countries, migration background does not seem to correlate with health-seeking behavior.

In terms of healthcare utilization in the year prior to contacting a GP, the sample first contacting their GP has high utilization rates across all measures compared to the general population (whose healthcare utilization is measured in 2012). The subsample being treated by an NPMH tends to have slightly lower utilization, which could indicate that treatment by NPMHs is more common among individuals with less severe health issues.

The survey measures of self-reported health largely align with healthcare utilization rates, as the sample contacting their GP is at a higher risk of having psychological disorders, such as anxiety, depression, or loneliness. It should be noted that the survey outcomes were all measured in 2012. For the majority of the sample contacting their GP, this implies that the survey outcomes are measured years before they seek care.

3.5 Treatment uptake and employment trajectories

Figure 2: Utilization of treatment types relative to the initial GP appointment



To illustrate the treatment trajectories of individuals, Figure 2 shows utilization of the various treatment options relative to the moment individuals contact their GP. By construction, individuals have not seen their GP for a mental health-related reason in the years leading up to the first GP appointment and the share seeing their GP jumps to 1 at time zero. GP visits for mental health-related reasons gradually decrease during the first year, stabilising at approximately 5% per month.

NPMH visits follow a similar but less pronounced pattern, with a peak utilization rate of approximately 10% in the first month after the GP visit. Most NPMH visits take place within the first year after the GP appointment, after which they stabilize at approximately 2%. It is important to note that Figure 2 includes individuals contacting their GP both before and after their GP office has hired an NPMH. In GP offices where talk therapy by NPMHs is available, utilization is thus larger.

Utilization of both basic and specialized mental healthcare is lower than utilization of NPMH visits in the first months after the GP appointment but stabilizes at a higher rate in subsequent years. This likely reflects that treatment in both basic and specialized mental healthcare facilities tends to be of longer duration than treatment by an NPMH.

Lastly, a significant share of the sample already uses pharmaceuticals for mental-health-related reasons in the years leading up to the first GP appointment. There is a

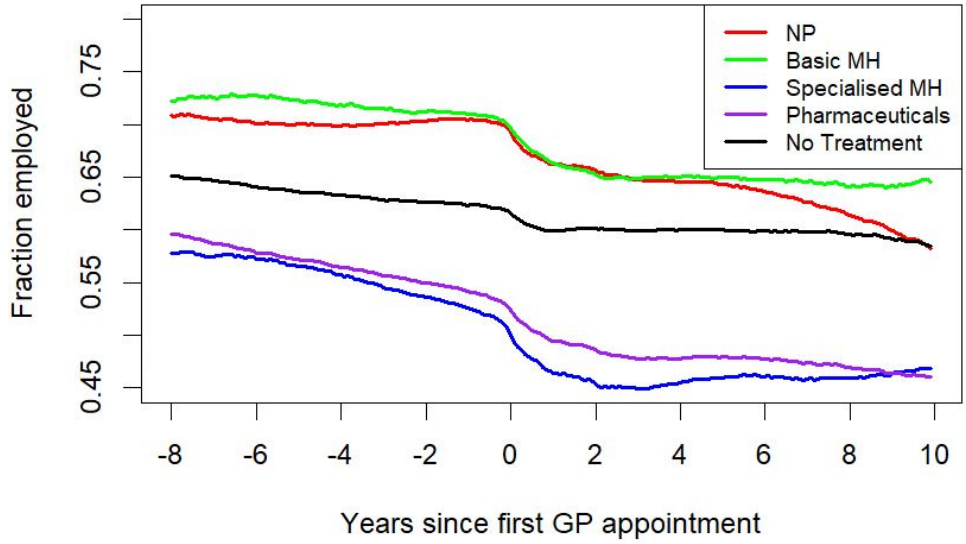
clear spike in the exact month of the GP appointment. Given the long waiting times for basic and specialized mental healthcare, it is most likely that this spike in pharmaceutical utilization is driven by prescriptions being provided by the GP. Pharmaceutical utilization stabilizes in subsequent years at a significantly higher level than prior to the GP appointment, at approximately 10%.

As already briefly mentioned, the type of treatment individuals receive is likely to depend on a wide range of observable and unobservable characteristics of the patient, such as, for example, the severity of their mental health problems. To illustrate these differences, Figure 3 shows the fraction of individuals employed over time for different groups, based on the type of treatment they receive in the first year after their GP appointment. Note that individuals can receive multiple types of treatment and can hence also be in multiple groups of Figure 3.

In the years leading up to the first GP appointment, there are already substantial differences in the employment rates between the various treatment types. Individuals who will be treated by either an NPMH or in basic mental healthcare are substantially more likely to be employed than individuals who will either receive no treatment or those who will receive specialized mental healthcare treatment and/or pharmaceuticals. Additionally, the drop in employment rate around the first GP appointment among those who will receive treatment by an NPMH or basic mental healthcare is also smaller. These employment differences could partly reflect the fact that those receiving treatment by an NPMH or basic mental healthcare suffer from less severe mental health problems.

The drop in employment around the first GP appointment should not be interpreted as a causal impact of mental health problems given the potential for reverse causality and (un)observed confounders. However, it could be seen as a proxy of such a causal impact. While the drop in employment among the NPMH group is smaller than the drop among individuals who will receive specialized mental healthcare, it is still economically meaningful. Almost 10 percent of these individuals lose their job around the first GP appointment. This implies that there is scope for mental health treatment to potentially increase the employment outcomes of this sample.

Figure 3: Employment trajectories for individuals split by the type of mental health treatment they receive in the first year after their initial GP appointment



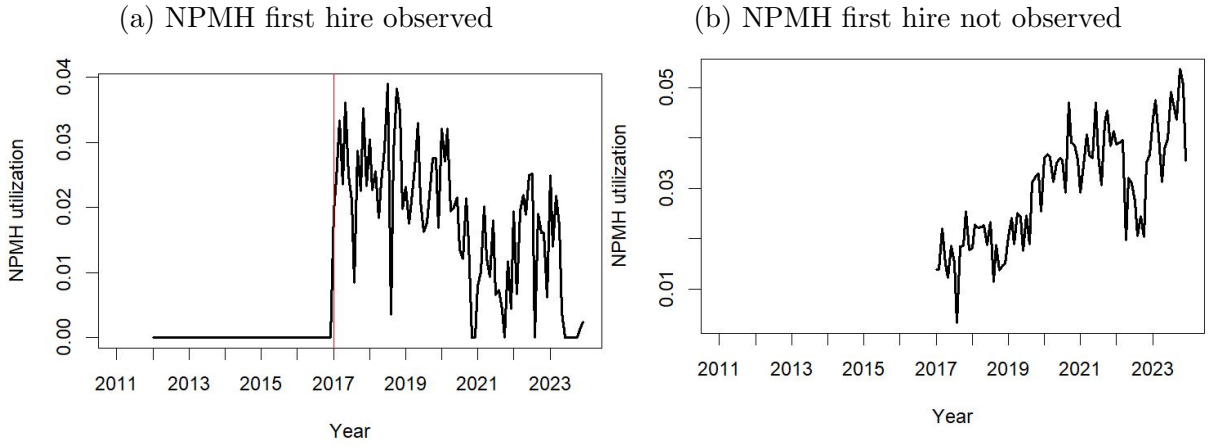
4 Causal impact of talk theraphy

As illustrated in the previous subsection, the type of treatment individuals receive correlates with their employment status in the years leading up to the moment they contact their GP. This correlation could partly be caused by differences in the severity of mental health problems faced by these individuals. A direct comparison of individuals who do and do not receive treatment from an NPMH is therefore likely to yield biased estimates.

To estimate the causal impact of talk therapy provided by NPMHs, I exploit the gradual introduction and expansion of the funding available for this type of treatment. As mentioned before, funding for this type of treatment first became available in 2011. At that moment, GP offices could receive funding for 9 hours per week for every 2350 patients registered at the office. Since the initial introduction in 2011, funding has steadily increased to 16 hours per week for every 2350 patients in 2024. With this increased funding availability, GP offices have gradually been more likely to hire an NPMH.

Unfortunately, information on when every GP office first hired an NPMH is unavailable. Therefore, I reconstruct this by calculating NPMH utilization rates at the GP practice level and determining the first month in which patients at the practice see an NPMH. To illustrate, Figure 4 shows the share of patients of a given GP office that have

Figure 4: Example of NPMH utilization between 2011 and 2023 at two different GP offices



a consultation with an NPMH in each month between 2011 and 2024. For the GP office in panel (a), NPMH utilization was zero until 2016 and first spiked in January 2017 as they hired their first NPMH. The GP office in panel (b) was not affiliated with Nivel prior 2017 and hence no utilization is observed (this is also the case in 2011 in panel (a)). Once the GP office is affiliated with Nivel, NPMH utilization is positive and hence the moment the NPMH was first hired cannot be reconstructed. Similarly, I determine the first moment of hire for all 609 Nivel-affiliated GP practices.

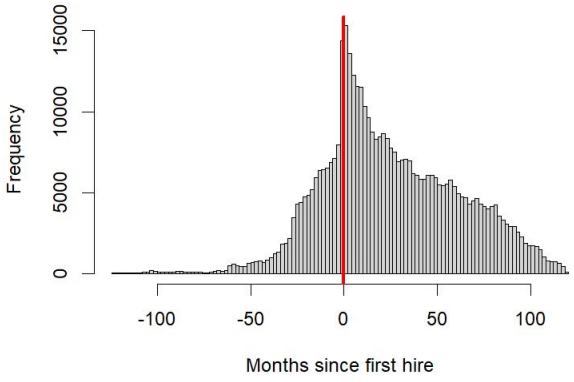
Given the months of the first hire, I can estimate the impact of talk therapy provided by NPMHs by comparing individuals who contact their GP right before or right after this moment. The intuition behind this is that individuals contacting their GP right after have a higher probability of receiving treatment from an NPMH while being similar in all other observable and unobservable characteristics. While the moment a GP office decides to hire an NPMH or expand the NPMH services might be endogenous, this comparison relies on random variation in the moment individuals seek care at the GP office.

One potential issue could be that hiring an NPMH directly impacts the inflow of patients. Patients could, for example, contact their GP after hearing about this treatment option, or GPs could proactively contact individuals they deem suitable for treatment by GPs. To determine whether this is the case, Figure 5 panel (a) shows the distribution of individuals contacting their GP relative to the month an NPMH is first hired.

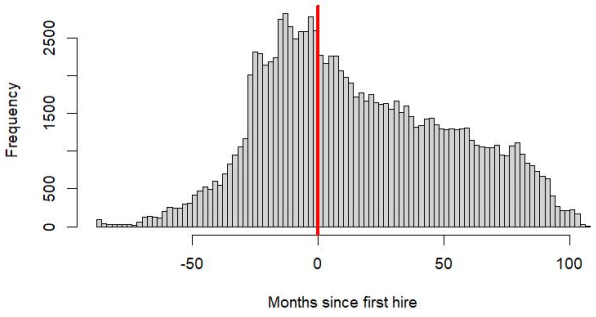
As seen in panel (a) of Figure 5, there is a substantial increase in the number of

Figure 5: Distribution of patients contacting their GP relative to the month an NPMH is first hired for the full GP practice sample (left) or the selected GP practice sample (right).

(a) Full GP practice sample



(b) Selective practice sample



patients contacting their GP in the months after an NPMH was first hired. This could be caused by an increased inflow of patients or by changes in the classification of visits as being for mental-health related reasons.[6] Given this discontinuity in the distribution, any estimation approach comparing individuals who contact their GP before and after the first hire of an NPMH is likely to be biased as these individuals differ in observable and unobservable characteristics. The discontinuity is however caused by a selective subset of GP practices. Using a McCrary test, I select the practices for which no significant discontinuity exists. The resulting distribution of patients can be seen in panel (b) of Figure 5. Appendix Table A.1 shows that for this selective sample, there are no differences in background characteristics of patients contacting their GP right before and right after the NPMH is hired.[7]

As an initial estimation approach, a direct comparison could be implemented between the cohort contacting their GP in the year prior to the hire and the cohort contacting their GP in the year after the hire. Such a difference-in-difference analysis, however, does not take into account the calendar time difference between these two cohorts. This results in significant time-varying differences between the cohorts prior to the initial GP appointment, violating the parallel trends assumptions. These results are available upon

[6]Note that I only observe individuals in the data if they have a GP consultation for a mental-health related reason. After the NPMHs are introduced, GPs might be more likely to classify visits as such if they refer onwards to the NPMH.

[7]In line with the discontinuity in the distribution of patients, there are also significant differences in their background characteristics.

request.

Instead, I exploit the discontinuity in treatment availability through a (difference-in-)Regression-Discontinuity design approach to estimate the causal impact of talk therapy. In this approach, the running variable is the month at which an individual contacts their GP, relative to the month at which the NPHM is hired. This method thus compares individuals contacting their GP right before the NPMH is hired to those contacting their GP right after while flexibly controlling for any time effects. The baseline specification looks as follows:

$$H_{it} = \alpha + f(t) + I(t > 0)g(t) + \delta I(t \geq 0) + \varepsilon_{it} \tag{1}$$

with H_{it} the outcome of interest for individual i who contacts their GP t months after the NPMH is hired. $f(t)$ and $g(t)$ flexibly control for the impact of time relative to the month of hire, and $I(t > 0$ indicates whether an individual has contacted their GP after the NPMH is hired. δ is thus the parameter of interest, capturing a jump in the outcome of interest at the month the NPMH is hired. In the baseline specifications, $f(t)$ and $g(t)$ are quadratic functions, and a triangular kernel is used around the threshold. The Imbens Kalyanaraman optimal bandwidth is used in all regressions.

H_{it} is measured at a specific point in time, and the panel structure of the data thus allows this to be measured both before and after individuals contact their GP. A difference-in-RD approach can be estimated by varying the moment of measurement from 8 years before the GP appointment to 10 years after the GP appointment. In this approach, all RD estimates looking at the outcome in the 8 years prior to the GP appointment are placebo estimates. Estimates 10 years after the GP appointment show how the impact of talk therapy provided by an NPMH potentially changes over time.

Many of the first hires take place in January, as increases in funding availability also always occur in January. Using the difference-in-RD approach controls for any calendar time impacts, i.e. individuals seeking care in January being different from those seeking care in December. If this is the case, the placebo estimates should not necessarily be zero, but they should be stable over time throughout the pre-treatment period.

4.1 Impact on mental healthcare treatment uptake

Figure 6: Regression discontinuity estimate on the share of patients visiting an NPMH in the first 6 months after the initial GP appointment

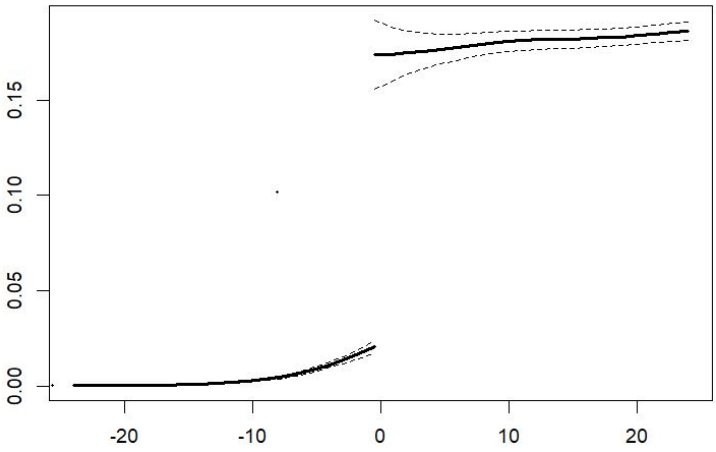


Figure 6 shows the RD estimate for the share of patients receiving talk therapy from an NPMH in the first 6 months after the initial GP appointment.[8] By construction, individuals contacting their GP in the months before the NPMH is hired rarely receive treatment from an NPMH. Once an NPMH is hired, there is an almost 15 percentage point increase in the probability that patients are treated by the NPMH. The second row of table 2 shows that this increased take-up persists throughout the first 24 months after the initial GP appointment. This implies that for most patients contacting their GP before the NPMH is hired, there is no catch-up of treatment in later months.

To examine the impact on all other treatment options, Table 2 shows the RD estimates when using GP visits, NPMH visits, basic mental healthcare, specialized mental healthcare or pharmaceuticals as outcomes of interest. The various columns use different windows relative to the GP appointment. Column (1) of the table should be seen as a placebo test, as it examines differences in treatment uptake in the 6 months prior to the GP appointment. By construction, the individuals in the sample have no GP or NPMH visits in this period, but reassuringly, the RD analyses also show no significant differences in the uptake of any of the other treatment options.

Columns (2) to (5) show differences in treatment uptake in the first 3, 6, 12 and 24

[8]Similar figures are available for all other healthcare measures.

Table 2: Differences in treatment uptake in 6 months prior to GP appointment and in the first 3, 6, 12 and 24 months after the GP appointment

	6 pre-months	3 months	6 months	12 months	24 months
P(GP visit>1)		-3.67%*	-1.61%	-1.62%	-1.86%
		(1.80)	(1.88)	(1.90)	(1.88)
P(NPMH visit)		15.48%**	15.27%**	12.61%**	12.04%**
		(1.04)	(1.13)	(1.22)	(1.34)
P(Basic MH)	0.85%			-0.42%	-0.82%
	(1.01)			(1.02)	(1.15)
P(Specialized MH)	-0.08%	-0.27%	0.07%	-0.22%	-0.28%
	(0.77)	(0.84)	(0.98)	(1.07)	(1.17)
P(Any MH treatment)	0.83%	12.41%**	11.95%**	8.94%**	7.42%**
	(0.90)	(1.53)	(1.61)	(1.68)	(1.76)
P(Pharmaceuticals)	1.66%	0.93%	1.06%	0.78%	1.24%
	(1.25)	(1.43)	(1.53)	(1.65)	(1.76)

Standard errors shown in parentheses; *significant at a 5% significance level; **significant at a 1% significance level

months after the initial GP appointment. For all time windows, there is a significant increase in the probability of receiving treatment by an NPMH. The magnitude of this increase decreases from 15 percentage points to 12 percentage points as the observation window becomes larger. This implies that some individuals contacting their GP prior to the first hire of the NPMH will eventually receive treatment from an NPMH. This is because they might see their GP again a couple of months later (after the NPMH is hired) to be referred to the NPMH. However, for the majority of the individuals contacting their GP prior to the moment the NPMH is hired, catch-up of treatment does not occur.

Table 2 furthermore shows no significant differences in the uptake of the other, already existing mental healthcare treatment options. Individuals contacting their GP after the NPMH is hired are equally likely to see their GP in later months, are equally likely to receive treatment in either basic or specialized mental healthcare and are equally likely to receive pharmaceuticals. The only exception to this is that there is a slight decrease in the probability of having an additional GP visit within the first 3 months of the initial GP appointment. This difference however disappears once the time window exceeds 6 months. This implies that talk therapy provided by NPMHs acts as a complement to the already existing treatment options. In line with this, the probability of receiving any

type of mental healthcare increases with a similar magnitude as the estimates for seeing an NPMH. The introduction of talk therapy at GP offices has thus been successful in increasing treatment uptake among individuals with mental health problems.

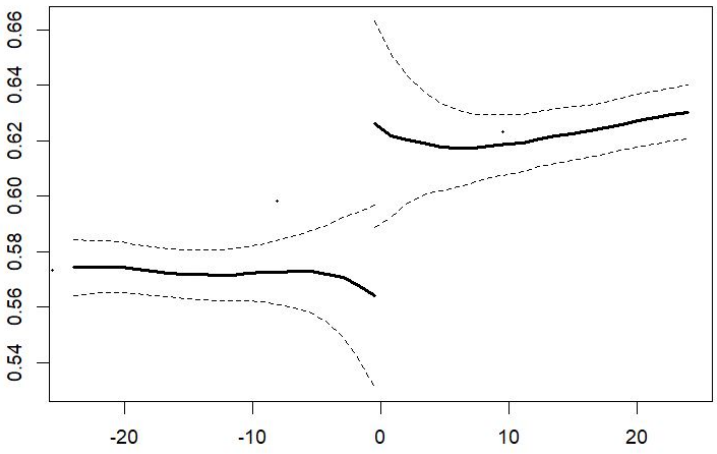
4.2 Impact on labour market outcomes

The analyses in the previous subsection have shown that once GP offices hire an NPMH, individuals contacting the GP offices are substantially more likely to receive talk therapy. There are no spillovers on other types of mental healthcare treatment. At the same time, individuals contacting their GP for mental health-related reasons experience a significant drop in their employment rate, as shown in the descriptive statistics section, and this drop in employment poses a substantial economic burden to society. Therefore, this section examines whether the increased treatment uptake also protects against the negative labour market consequences of mental health problems.

To estimate the causal impact of talk therapy on labour market outcomes, I follow a similar (difference-in-)Regression-Discontinuity approach, which uses various economic measures as outcome variables. I use a sharp regression discontinuity which thus estimates the impact of the introduction of NPMH services on labour market outcomes.

Figure 7 shows the resulting RD estimates using an indicator for employment 1 year after the initial GP appointment as the outcome of interest. The estimated discontinuity

Figure 7: Regression discontinuity: the share of patients employment 1 year after the initial GP appointment



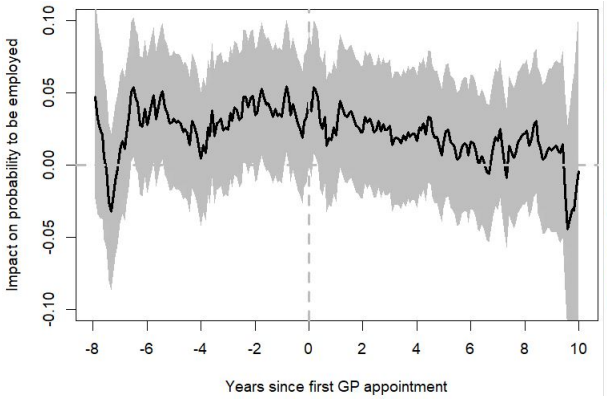
is positive but insignificant. To determine the effect of any unobserved differences at the threshold, a difference-in-RD framework is used. In this framework, the outcome is measured at a fixed point in time relative to the initial GP appointment and the discontinuity at the threshold is re-estimated for each point in time. The pre-treatment estimates can be used to correct for any time-fixed observable and unobservable differences at the threshold.

Figure 8 shows the results of this difference-in-RD framework.[9] Panel (a) shows the results for employment, while panel (b) shows the impact on the uptake of sickness/disability benefits. Note that the estimate shown in panel (a) of Figure 8 at 1 year after the initial GP appointment corresponds to the discontinuity as estimated in Figure 7. For both the employment rate and the receipt of sickness/disability benefits, the placebo estimates are similar in magnitude to the post-treatment estimates, implying that there is no significant improvement in the labour market outcomes of patients as a result of treatment provided by the NPMHs.

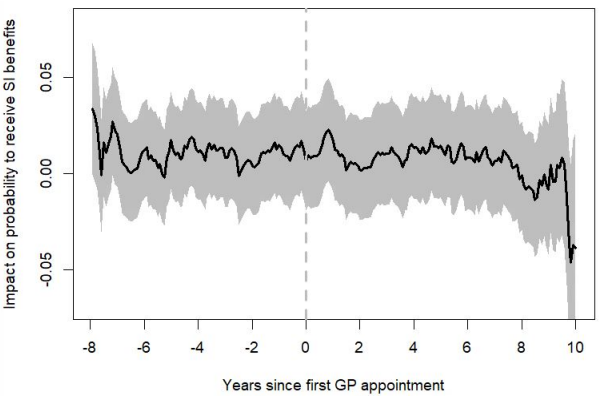
One could argue that these estimates are noisy, especially when taking into account that the introduction of NPMH services increases the probability of receiving talk therapy from an NPMH by approximately 10 percentage points. However, as shown in Figure 9, there is no significant impact even when examining the impact on total earnings over the

Figure 8: Estimated RD estimates and 95% confidence intervals of the impact of NPMH introduction on labour market outcomes of patients measured starting 8 years before the initial GP appointment until 10 years after the appointment

(a) Employment



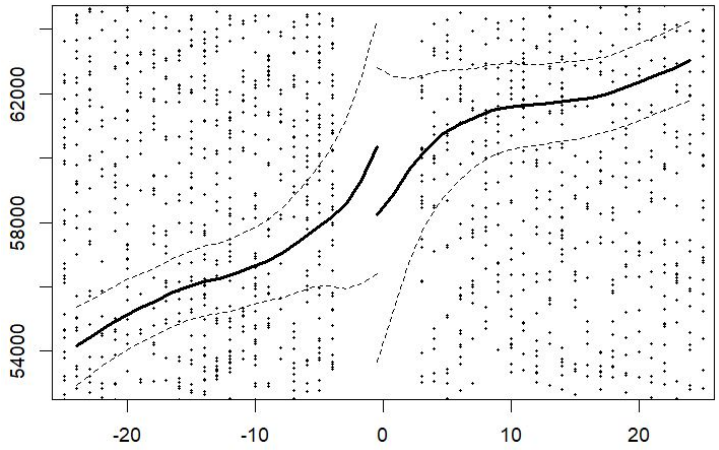
(b) Sick or Disability insurance



[9]Similar figures are available for all healthcare outcomes. These are similar to the estimates reported in Table 2.

5 years after the initial GP appointment. Additionally, as will be shown in the following subsection there are also no significant improvements in labour market outcomes among subgroups for which the uptake of treatment increases even more.

Figure 9: Regression discontinuity: labour earnings in the first 5 years after the initial GP appointment



The healthcare and employment estimates are robust against a wide range of alternative specifications. These include using larger or smaller bandwidth, a donut around the threshold month, and more or less flexible control functions for the running variable.

5 (Reducing) inequality in treatment uptake

The previous sections have shown that the introduction of talk therapy at GP offices has significantly increased treatment uptake, but has not improved patient labour market outcomes. The final question that remains is whether or not it has been effective in reducing the existing disparities in healthcare utilization. Previous research has shown that the uptake of treatment for mental health problems can differ significantly based on individual characteristics such as migration background and education. Sentell et al. (2007); Cook et al. (2017) for example find that non-white individuals in the US are up to 80% less likely to use mental healthcare, compared to their white counterparts. The expansion of treatment options, such as through the introduction of talk therapy at GP offices, could either narrow or widen these disparities in treatment uptake, depending on the degree to which different groups utilize the new treatment option. To determine

whether the introduction of talk therapy at GP offices has in fact reduced healthcare disparities, I will first estimate these disparities, before turning to heterogeneity analysis.

The descriptive statistics in Table 1 potentially hint at moderate differences in treatment uptake in the Netherlands based on gender and education level. However, to accurately measure disparities in treatment uptake, both the utilization of care and the need for care should be included. To illustrate, the descriptive statistics show that individuals with a migration background are more likely to use mental healthcare than those without a migration background. However, this does not necessarily imply that individuals without a migration background use disproportionally too little mental healthcare. It could be the case that individuals with a migration background have a higher (or lower) need for care and should thus have a higher (or lower) utilization of care.

To determine whether disparities in mental healthcare uptake exist in the Netherlands, I analyze the annual expenditure healthcare data and survey measures on health for the full population in 2012 (column (1) of Table 1) and estimate the following equation:

$$H_i = \alpha + \beta X_i + \delta Z_i + \varepsilon \tag{2}$$

with H_i an indicator for using either basic or specialized mental healthcare[10] X_i indicators for age, gender, migration background and education level and Z_i survey measures of health. To determine the influence of differences in health, Equation 2 is estimated while including and excluding the survey health measures Z_i and while conditioning on the subsamples with a high risk of either psychological disorder, anxiety and depression or loneliness.

Table 3 shows the estimated differences in mental healthcare utilization. Column (1) shows that when not controlling for differences in underlying (self-reported) health, older individuals, males, Dutch natives, and higher-educated individuals are less likely to use mental healthcare. The estimated differences are sizeable, ranging from 0.51 to 2.09 percentage points, or 12 to 50 percent of the baseline utilization rate.

Columns (2) to (5) show that for some background characteristics, differences in

[10]Results using only basic mental healthcare or only specialized mental healthcare are similar.

Table 3: Differences in mental healthcare utilization rates in 2012 conditional and unconditional on self-reported mental health

	Unconditional regression	Conditional on self-reported mental health	High risk psychological disorder	High risk anxiety and depression	High risk loneliness
Aged $< 45^a$	1.84%**	1.73%**	7.35%**	3.73%**	6.17%**
	(0.10)	(0.09)	(0.86)	(0.21)	(0.55)
Aged $> 65^a$	-2.09%**	-2.33%**	-11.14%**	-5.61%**	-8.02%**
	(0.09)	(0.09)	(0.87)	(0.19)	(0.50)
Male^b	-1.36%**	-0.58%**	-0.45%	-0.98%**	-1.35%**
	(0.07)	(0.07)	(0.67)	(0.15)	(0.39)
Dutch native^c	-0.61%**	0.92%**	7.89%**	1.32%**	4.20%**
	(0.10)	(0.10)	(0.74)	(0.20)	(0.47)
Low education^d	0.59%**	-1.37%**	-8.56%**	-1.53%**	-2.20%**
	(0.15)	(0.15)	(1.27)	(0.31)	(0.81)
Middle education^d	0.51%**	-0.44%**	-3.68%**	0.03%	-1.16%
	(0.12)	(0.12)	(1.18)	(0.26)	(0.74)
Average utilization rate	4.4%	4.4%	23.6%	8.5%	12.0%
Number of individuals	365,281	350,791	17,048	139,495	26,853

Standard errors shown in parentheses; *significant at a 10% significance level; **significant at a 5% significance level; (a) Omitted age category is individuals aged between 45 and 65. Note that individuals 18 or younger are not included in survey data; (b) Omitted gender is female; (c) Omitted migration background is first or second-generation migrant; (d) Omitted educational level is high educated.

self-reported health partly explain the differences in healthcare utilization, while other differences in self-reported health mask the gap in utilization. More specifically, the substantial difference in utilization between age groups is largely unaffected by differences in self-reported health. For all regressions, individuals aged 18-45 are approximately 30% more likely to use care than those aged 45-65, while those older than 65 are almost 50% less likely to use mental healthcare compared to those aged 45-65. Lower utilization rates at younger ages align with literature showing that the onset of many mental health tends to be during early adulthood (OECD, 2014; Jones, 2013). However, the gaps in treatment among the subsamples with a high risk of mental health problems could indicate undertreatment among older cohorts. Alternatively, these individuals might have already been treated at younger ages.

When looking at gender, differences in self-reported health explain approximately half of the difference in utilization. When accounting for self-reported health, males are approximately 2 to 10 percent less likely to use mental healthcare compared to females. These differences largely align with literature showing lower treatment uptake rates for

men (Hauenstein et al., 2006).

When examining differences in mental healthcare utilization based on migration background and educational attainment, differences in self-reported health have a significant impact and flip the direction of the disparity. Without controlling for self-reported health, Dutch natives and higher educated individuals are approximately 10% less likely to use mental healthcare than their counterparts. However, these groups tend to use relatively more healthcare when controlling for self-reported health. More specifically, Dutch natives are 10 to 30 percent more likely to use mental healthcare than non-natives whereas higher educated individuals are 10 to 15 percent more likely to use care.

It should be noted that the survey measures of health could be impacted by the utilization of care in which case they would be bad controls. However, the analysis does show that when examining differences in healthcare utilization, controlling for self-reported health measures can have large implications. While treatment disparities are less substantial than those reported for the US, differences in treatment uptake for mental health problems are still significant. Older individuals, males, individuals with a migration background and those with lower educational attainment are between 10 and 30 percent less likely to use care.[11] Given these significant disparities, it is essential to determine whether an expansion of treatment options closes part of the treatment gap or only further widens the gap.

Heterogeneity in the impact of the introduction of talk therapy at GP offices

Table 4 shows the impact of introducing talk therapy at GP offices for various subgroups. These estimates are obtained through a split-sample approach. Column (1) shows the impact on the probability of receiving talk therapy from an NPMH in the first 6 months after the initial GP appointment, and column (2) shows the impact on the probability of receiving any type of mental healthcare treatment in the same time window. The estimates indicate that younger individuals, females, non-natives and individuals with

[11] For age, the difference can be up to 130% when comparing those below the age of 45 to those above the age of 65. However, this age difference might be explained by the fact that older individuals already received treatment when they were younger.

Table 4: Differences in treatment uptake in the first 6 months and earnings in first 5 years after the GP appointment using selective first hires and all first hires

	P(NPMH)	P(Any)	5-year earnings
Age:			
< 45	16.0**	15.0**	-1966
	(1.8)	(2.4)	(4802)
$45 - 65$	12.3**	10.5**	2486
	(2.3)	(2.9)	(7898)
> 65	4.6**	5.2**	0
	(1.9)	(2.4)	(0)
Gender:			
Male	10.1**	11.1**	-7492
	(1.7)	(2.3)	(6450)
Female	14.7**	11.8**	2446
	(1.7)	(2.1)	(3734)
Migration background:			
Native	11.5**	9.9**	-2909
	(1.3)	(1.7)	(4079)
Non-native	17.5**	18.8**	1119
	(2.9)	(3.8)	(7390)
Education:			
Unknown	8.8**	9.1**	-8429
	(1.7)	(2.1)	(5347)
Low	8.4**	4.9**	3391
	(2.4)	(3.5)	(3781)
Middle	19.4**	16.8**	2723
	(2.9)	(3.5)	(5557)
High	16.1**	16.2**	5674
	(3.1)	(3.9)	(11488)

Standard errors shown in parentheses; *significant at a 5% significance level; **significant at a 1% significance level

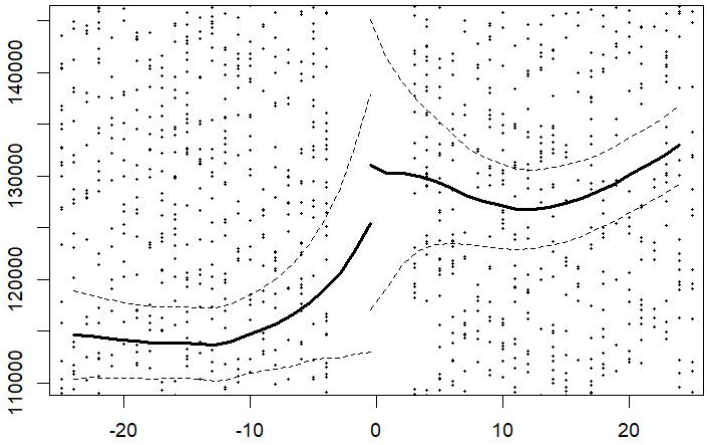
middle or high educational attainment are much more likely to receive talk therapy and, consequently, much more likely to receive any type of mental healthcare.

However, these groups that see the biggest increase in treatment uptake are the ones that use the most already-existing mental healthcare options. The introduction of talk therapy has thus increased existing healthcare disparities. An important exception to this is non-natives. This group experiences the largest increase in treatment uptake (17.5 p.p.) while using disproportionately fewer other types of mental healthcare. Thus, healthcare

disparities based on migration background are reduced.

Lastly, column (3) of Table 4 shows the impact of the introduction of talk therapy on labour earnings in the first 5 years after the initial GP appointment. Similar to the entire sample results, these estimated impacts are insignificant for all groups. Even the groups that experience the largest increases in treatment uptake do not see improvements in labour market outcomes. To illustrate this further, Figure 10 shows the RD estimate for highly educated patients.[12] While the probability of receiving talk therapy increases by 16 percentage points for these patients, the estimated increase in their total labour earnings over 5 years is insignificant.

Figure 10: Regression discontinuity: labour earnings in the first 5 years after the initial GP appointment for highly educated patients



[12]Figures of the RD estimates for other subgroups are available upon request.

6 Conclusion

According to the OECD, half of all individuals will suffer from mental health problems at some point in their lifetime, and the majority of these individuals do not receive adequate treatment (OECD, 2014; NIMH, 2024). These mental health problems can have large negative impacts on labour market outcomes as their economic burden is estimated to be approximately 5% of world GDP (Lancet, 2020).

Treatment of these mental health issues has been shown to effectively reduce their health burden in the medical literature (Hofmann et al., 2012). Yet, a large share of individuals suffering from mental health disorders do not receive adequate treatment and disparities in treatment uptake based on for example migration background are substantial (Sentell et al., 2007; Cook et al., 2017).

Increasing treatment uptake among the entire population, and particularly among these groups with relatively low treatment uptake, might greatly reduce the health burden of mental health disorders. Given the effectiveness of treatment in reducing this burden, this could potentially have spillovers on patients' labour market outcomes. However, causal estimates of the impact of treatment on labour market outcomes are scarce.

In this paper, I fill two gaps in the literature by examining a reform in the Netherlands that introduced an easily accessible form of cognitive behavioural therapy (commonly referred to as talk therapy) at General Practitioner (GP) offices in the Netherlands provided by Nurse Practitioners (NPMHs) specialized in mental healthcare. I first determine whether this introduction has increased the uptake of mental health treatment for the full population and, if so, whether patient labour market outcomes have also improved. In the second step, I examine whether this expansion of treatment options has reduced the existing disparities in healthcare utilization.

By exploiting the introduction of funding availability through a (difference-in-)Regression-Discontinuity framework, I find a significant increase in the uptake of talk therapy among patients seeking care. The uptake of already existing forms of mental healthcare is not affected, implying that the talk therapy provided at GP offices acts as a complement and not a substitute to these other forms of treatment. Consequently, the probability

that patients seeking care, receive any form of mental healthcare significantly increases by approximately 10 percentage points. Despite the significant increase in the use of talk therapy at GP offices, I find no improvement in a wide range of patient labour market outcomes. Employment, earnings and the receipt of various social benefits are unaffected in the short and long run (up to 8 years after treatment).

In the second part of the paper, I examine whether the introduction of talk therapy at GP practices has reduced some of the existing disparities in healthcare utilization. Whereas previous literature has estimated these disparities by only looking at utilization rates, I combine measures of utilization and need for care. Controlling for the need for care substantially impacts both the magnitude and the sign of the estimated disparities. Combining these measures shows that older individuals, males, and those with either a migration background or lower educational attainment use disproportionally little mental healthcare.

With these existing disparities in mind, I estimate heterogeneous impacts of the introduction of talk therapy at GP offices and find that younger individuals, females and those with a migration background or higher educational attainment are most likely to receive treatment by the NPMH. With the exception of individuals with a migration background, these groups were already relatively more likely to use existing forms of mental healthcare. The introduction of talk therapy at GP offices has thus increased existing disparities in mental healthcare utilization. As mentioned, individuals with a migration background are the only exception to this. Treatment uptake of already existing mental healthcare among this group is relatively low, but the increased uptake of talk therapy is relatively high. This implies that disparities based on migration background have decreased due to the introduction.

The null results on labour market outcomes are in contrast with prior research on the causal impact of mental health treatment. Biasi et al. (2021); Shapiro (2022) and Prudon (2023) all find significant impacts on labour market outcomes due to treatment against bipolar disorder, the use of antidepressants, and waiting times for mental health treatment. One potential explanation for this discrepancy is that all three papers examine

treatment which incorporates (or is strictly limited to) the use of pharmaceuticals while treatment in this paper largely excludes pharmaceuticals. Additionally, Biasi et al. (2021) and Prudon (2023) focus on relatively severe mental health problems, while talk therapy at GP offices is intended for less severe mental health problems. While patients receiving talk therapy at GP offices arguably suffer from less severe mental health problems, it is important to note that these patients still experience a persistent five percentage point drop in their probability of employment around the moment they seek treatment. There is thus scope for treatment to have a positive labour market impact.

The results in this paper highlight that the effectiveness of treatment for mental health problems in terms of labour market improvement is not guaranteed. However, the introduction of talk therapy at GP offices has significantly increased treatment uptake and reduced disparities in healthcare utilization based on migration background. At the same time, disparities in utilization based on age, gender, and educational attainment have potentially increased. Although not directly translating into economic gains, this increased treatment uptake could still result in significant health and well-being gains.

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A Appendix

Table A.1: Differences in background characteristics at the threshold

	Estimated discontinuity
Age	-0.29
	(0.88)
Male	-0.05%
	(1.89)
Native	0.14%
	(1.47)
Education unknown	0.00%
	(1.86)
Education low	0.88%
	(1.47)
Education middle	0.57%
	(1.63)
Education high	-1.46%
	(1.49)

Standard errors shown in parentheses; *significant at a 5% significance level; **significant at a 1% significance level

B Online Appendix