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Psychodynamic psychotherapy is associated with sustained reduction in health care utilization and cost

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Abstract

Our objective was to examine the effectiveness and efficiency of psychodynamic psychotherapy on the reduction in health care utilization and cost while controlling for age, gender, and year. Health care utilization and cost were examined yearly in 1,675 patients from 2 years before outpatient psychotherapy (i.e., baseline) to three consecutive years after psychotherapy in a naturalistic longitudinal design. A multilevel analytic approach (LMLM) was applied to account for repeated measures effect and missing data. In the year prior to psychotherapy, there was a significant increase in total cost compared with baseline (14.8%) and in use of health care services (primary and specialist doctors' visits and outsourced referrals). In the first year following therapy, there was a significant decrease in total cost (10%) and in use of health care services (all doctors' visits, imaging, and outsourced referrals). The decrease was to baseline levels or lower and was maintained for two additional years. Psychiatric medication usage increased significantly after psychotherapy and remained so. The overall cumulative decrease in total cost per patient over 3 years after therapy was 3,665.92 NIS, equalling a 69% average cost of psychotherapy. Further cost saving can be expected due to the reduction in sick leave, disability, and psychiatric hospitalization. These findings support the notion that providing outpatient psychodynamic psychotherapy can be financially beneficial to health care systems, although further research is required for causal inferences. Also, an increase in health care utilization along with scarce physical findings may indicate unaddressed psychological distress and warrant referral for mental assessment and possible psychotherapy.

KEYWORDS

economic benefits, health care utilization, outcome study, psychodynamic psychotherapy

1 | INTRODUCTION

Mental and physical health are correlated (Kemp & Quintana, 2013). Negative emotions and cognitions have been found to be associated with physical health conditions, such as cardiovascular morbidity and all-cause mortality (Gallo & Matthews, 2003). Many chronic medical conditions occur at higher incidences in people with depression (Gagnon & Patten, 2002; Patten et al., 2008) and anxiety (Sareen, Cox, Clara, & Asmundson, 2005). Also, depression is correlated with an increased risk of stroke morbidity and mortality (Pan, Sun, Okereke, Rexrode, & Hu, 2011). Finally, depression, anxiety, personality factors, social isolation, and chronic life stress all contribute to the pathogenesis and expression of coronary artery disease (Rozanski, Blumenthal, & Kaplan, 1999).

Psychological factors play a significant role in primary care visits. As many as 25% to 50% of primary care visits amount to medically

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unexplained symptoms (MUS) (Barsky & Borus, 1995). The prevailing assumption is that the causes of the phenomenon are composed of both physical and mental elements (Eriksen, Kerry, Mumford, Lie, & Anjum, 2013). People presenting with MUS have twice as many visits labelled by their primary doctor as "psychological" compared with people who received a diagnosis that could explain their symptoms (Verhaak, Meijer, Visser, & Wolters, 2006). A more recent study found that 17% of family physician visits met criteria for bodily distress syndrome, the newer taxonomic equivalent to MUS (Budtz-Lilly, Vestergaard, Fink, Carlsen, & Rosendal, 2015). Most people with MUS received somatic intervention, although admittedly, they actually sought out emotional support (Ring, Dowrick, Humphris, & Salmon, 2004).

Patients with physical symptoms, explained or unexplained, were associated with higher entry into primary care for mental problems in comparison with people with no somatic complaints. Patients with MUS only were associated with significantly higher entry into specialized mental health care compared with all others (Van Eck van der Sluijs et al., 2016).

There is a growing trend of addressing the economic aspect of medical services, including mental health. A reduction in the overuse of health services can be a significant secondary outcome of psychotherapy; therefore, there is a need for naturalistic psychotherapy studies examining economic criteria as their main outcome variable.

A recent study on the cost-effectiveness of publicly funded psychotherapy in Canada found that for every $1 invested in psychological services, $2 was saved to society (Vasiliadis, Dezetter, Latimer, Drapeau, & Lesage, 2017). Similarly, in a study performed in France, for every €1 spent on psychotherapy for depression or anxiety, there was a saving of €1.95 and €1.14, respectively, on costs arising from medical consultations, hospitalization, medication, sick leave, and early retirement (Dezetter, Briffault, Ben Lakhdar, & Kovess-Masfety, 2013). Finally, the estimated cost of increasing accessibility to psychological services in Britain was expected to be fully returned through added taxes from those returning to the workforce and an overall reduction in disability stipends (Laynard, Clark, Knapp, & Mayraz, 2007).

Several studies have found an increase in the use of health services before receiving a mental health diagnosis for the first time regardless of treatment (Borus et al., 1985) and before seeking psychological treatment (Holder & Blose, 1992; Kraft, Puschner, Lambert, & Kordy, 2006). These findings indicate a link between untreated mental distress and an increase in the use of health services.

Many studies and meta-analyses found psychotherapy and psychological interventions correlated with a reduction in health services utilization and cost (Chiles, Lambert, & Hatch, 1999; Cummings & VandenBos, 1981; Gabbard, Lazar, Hornberger, & Spiegel, 1997; Mumford, Schlesinger, Glass, Patrick, & Cuerdon, 1984). Beutel, Rasting, Stuhr, Rüger, and Leuzinger-Bohleber (2004) went on to find a stable and lasting reduction in self-reported work absenteeism and hospitalization days following psychoanalysis. Kraft et al. (2006), on the basis of 176 participants, found a rise in calculated semiannual cost prior to psychotherapy and a decrease in cost thereafter.

Key Practitioner Message

- This study suggests that practitioners should be aware of the positive effect psychotherapy may have on patients' physical wellbeing and health care utilization.
- Practitioners may consider monitoring individuals' health care utilization throughout therapy as a possible indicator of change.
- These findings suggest that an increase in health care utilization along with scarce physical findings may indicate unaddressed psychological distress and warrant referral for mental assessment and possible psychotherapy.

Berghout, Zevalkink, and Hakkaart-Van Roijen (2010), on a sample size of 231, assessed self-report of sick leave days and health expenditure before psychoanalysis and at two points after it. They found a sustained reduction in sick leave days and health expenditure after psychoanalysis. Knekt et al. (2011), reporting on 326 patients, found short-term therapy, long-term therapy, and psychoanalysis all to be effective in improving work ability and reducing symptoms. Psychotherapy showed faster results, whereas psychoanalysis was more effective in the long run. Abbass and Katzman (2013) conducted a review of several studies and concluded that intensive short-term psychodynamic psychotherapy is cost-effective in returning to work and decreasing health care costs. Abbass, Kisely, Rasic, Town, and Johansson (2015), in a more recent and larger study (890 treated cases and 192 controls), found short-term dynamic psychotherapy to be beneficial in reducing health care expenditures. Finally, a large, up-to-date study was conducted in Germany with 22,294 subjects who underwent outpatient psychotherapy (Altmann et al., 2016). An increase in annual average work disability days, inpatient cost, and the number of hospitalization days were found throughout the year prior to psychotherapy. A significant decrease in disability days (41.8%), hospitalization days (27.4%), and inpatient cost (21.5%) was observed between the year prior and the year after psychotherapy. Outpatient cost was unaffected by therapy, whereas medication consumption increased after treatment. Both changes in disability days and medication consumption were sustained for 2 years after completion of therapy.

Notable differences exist in the studies of the effect of psychotherapy on the economic aspects of health care services. To begin with, general health care services vary considerably in availability and cost and can be viewed as a continuum starting from free access to all services through degrees of patients' participation fees and ending in fully privatized medical systems. This is also true regarding access to and cost of mental health services.

In addition, the studies differed significantly in size, source of information and data collection (patient files vs. self-report), psychological approach, length of therapy, and inclusion criteria for psychotherapy.

Many of the existing studies included small samples that pose a dual problem: cost variables often include great variability, and it is difficult to overcome the limitation of representativeness. Another significant limitation in many of the studies is the use of the total cost variable without detailing the cost of the various services that compile this total cost. In doing so, there is no differentiation between services that decreased, remained unchanged, or even increased after therapy. Further limitations found in the Altmann study and many others include the lack of statistical control for explanatory variables such as age, gender, or other factors known to be associated with health expenditure. Finally, no distinction was made between psychiatric and somatic medication or between general and psychiatric hospitalization. On this last point, the results of a small (N = 18) recent Israeli study found that long-term intensive psychoanalytic treatment for the severely mentally ill resulted in a significant reduction in the number of psychiatric hospitalization days when comparing the 5 years prior to treatment with the 5 years following the beginning of treatment (Amir & Shefler, 2020).

Therefore, additional studies are needed to fully assess the correlation between psychotherapy and health care services, utilization, and cost. Studies should be large, based on systematic medical records, be relevant to both general medicine and mental health, and should control for as many relevant explanatory variables as possible. This observational study set out to examine the cost and utilization of health services in patients who received psychodynamic psychotherapy over a period of 16 years. We hypothesized

1. an increase in health care costs and utilization will be apparent prior to the beginning of psychotherapy,
2. health care costs and utilization will decrease after psychotherapy, and
3. the reduction will be maintained for a meaningful period (over 3 years).

2 | METHOD

2.1 | Sample

The sampling was performed by Clalit Health Services, the largest health service organization in Israel. Talbiya Mental Health Outpatient Clinic, the central and major outpatient clinic in Jerusalem, was chosen for this study. The clinic was attended by people from the whole district of greater Jerusalem. The study was approved by both the Clalit Health Services Community Review Board and Clalit Health Services Data Sampling Committee. Inclusion criteria were (1) age over 18 years when beginning psychodynamic psychotherapy, (2) diagnosis of a mental disorder according to ICD10, (3) received psychodynamic psychotherapy sessions provided by a psychotherapist, and (4) minimum length of psychodynamic psychotherapy was three meetings in a 3-month period (a quarter). The exclusion criterion was a diagnosis of substance abuse.

The initial sample consisted of all patients seen by psychotherapists in the clinic over a period of 16 years between the years 2001 and 2016 (N = 2,552). During this period, the mental health system in Israel remained stable, and Clalit Health Services provided all mental health services, including psychotherapy, free of charge, without deductible or co-payments, and with no gatekeeping or referral system. In July 2015, a reform in mental health took effect, transferring insurance responsibilities from the state to health organizations, such as Clalit. Because of the preexisting mental health services, this reform had little effect on referrals or provided services in this clinic.

Dates of beginning and ending of treatment and number of meetings were coded on the basis of computerized documentation in clinic records. After removing patients who did not meet inclusion criteria, the sample consisted of 1,675 patients, treated by a total of 27 therapists. The average number of clients per therapist was 62.04 (SD = 70.52, ranging between 1 and 224). During the study period, dynamic treatments were the only treatments given in the clinic; therefore, all psychotherapeutic interventions in our sample were psychodynamically oriented. The main interventions included mirroring and exploring the emotional experience, interpreting unconscious content, and exploring the patient's interpersonal dynamics as expressed in the relationship with the therapist. Psychotherapy treatment provided by therapists was heterogenic in many ways, with different therapists, dynamic theoretical orientation, length, and clinical continuum (i.e., the spectrum between exploratory and supportive). This heterogeneity reflects the situation in the field as it was. The sample consisted of 1,107 females (66%), and the mean age (at the beginning of therapy) was 36.41 (SD = 14.52). The mean duration of psychotherapy was 28.86 (SD = 25.81) sessions, spanning over an average of 4.70 (SD = 5.20) quarters (equivalent to 14.1 months).

2.2 | Health care cost and utilization variables

For all patients, Clalit Health Services is both a medical insurer and service provider; therefore, all provided information is full and accurate. *Cost variables* were provided as cost in new Israeli shekels (NIS) per quarter and included nonpsychiatric (somatic) medication, psychiatric medication, imaging (magnetic resonance imaging [MRI], computed tomography [CT], and X-ray), and nonpsychiatric (somatic) hospitalization. *Utilization variables* were provided as a total number per quarter of visits to a general practitioner (GP), specialist visits, and outsourced referrals.[1] *Total expense*: in order to create a total expense variable, the sum of cost variable and utilization variable, we needed to convert the utilization variable into cost. The costs of GP and specialist visits were calculated by multiplying their price on the official Israeli Ministry of Health pricelist (GP visit 111 NIS and specialist visit 312 NIS) by the number of visits. We used the average cost per referral form provided by Clalit Health Services (1,490 NIS per form). The

[1]In Israel, this is known as "Form 17," a payment voucher or a letter of financial obligation provided by the health service to an external medical service provider by which ensuring payment.

cost of outsources referrals was calculated by multiplying this average cost per form by the number of referral forms.

2.3 | Data preprocessing and analysis approach

First, we distinguished between healthy individuals with no medical documentation per quarter and those whose medical documentation was missing because of prior medical coverage by an alternative health care service or interrupted by death. Similar to Altmann et al. (2016), we determined a "trust interval" for each patient by determining the earliest quarter and the latest quarter with an entry of any variable. Quarters without cost/utilization entries within the trust interval were assumed to indicate the patient was healthy and therefore set to 0. Empty quarters outside these trust intervals were coded as missing values. Second, for each patient, we coded six time phases: 2 years before treatment (−2), 1 year before treatment (−1), treatment year (0), 1 year after treatment (1), 2 years after treatment (2), and 3 years after treatment (3). Third, we computed the age of each participant at the end of each quarter. The final data set, therefore, included the following variables: time phase, dependent cost and utilization variables, gender, age, time (in quarters), and the number of sessions. The last four variables were included to ensure that our predictions of cost and utilization variables could not be attributed to gender, age, time, or the number of sessions.

Data were analysed using LMLM via the "nlme" package (Pinheiro, Bates, DebRoy, & Sarkar, 2014) in R version 3.4. LMLM is specifically suitable for analysing data in psychotherapy studies because it allows dynamic fluctuations in individuals' data across time. It can take into account the dependence of each patient's repeated measurements and can also provide information on therapists' level. It does not require the sphericity assumption or the homogeneity of regression assumption (Tasca & Gallop, 2009). Another advantage of applying the LMLM model to psychotherapy studies is its flexibility and robustness in handling missing data, an inevitable and significant characteristic of psychotherapy research, especially in a naturalistic setting (Gallop & Tasca, 2009). This strength allows one to maximize sample size without losing participants due to missing data and avoid data bias due to imputation techniques (Gueorguieva & Krystal, 2004; Tasca & Gallop, 2009). Because three-level models did not converge, a two-level model was used. Models were adjusted for repeated measures with restricted maximum likelihood (REML) estimation, a first-order autoregressive covariance structure at the time level and random intercepts at the patient level. The effect of the six-time phases was coded by five contrast variables, allowing us to estimate the effect of each phase separately.

In order to decide which of the possible control variables should be part of the final models and in order to examine the independent effects of gender, age, time, and number of sessions on the outcome variables, we performed preliminary analyses.

The preliminary analyses were computed on each outcome variable and included the four controlled variables without the contrast variables that represent the therapy effect. In order to test Hypothesis (1), we compared cost and utilization 2 years prior with 1 year prior to therapy. In order to test Hypothesis (2), we compared cost and utilization 1 year prior to therapy with 1 year following therapy. In order to test Hypothesis (3), we compared cost and utilization 2 and 3 years after therapy with 1 year prior to therapy. Model formulas are specified in the Supporting Information. The preliminary analyses model included eight parameters for each dependent variable: the intercept, effect for time (Level 1 predictor), gender (Level 2 predictor), age (Level 1 predictor), and the number of sessions (Level 2 predictor). The remaining parameter included the intercept variance, which captured random variation for intercept estimation for different patients, residual variance, and a first-order autoregressive parameter capturing the covariance structure at Level 1. Models did not include variance parameters for random variations in slopes because initial estimations that included these parameters prevented models from converging due to very little variance.

The main analysis models included eight parameters for each dependent variable: the intercept, effect for time (Level 1 predictor), gender (Level 2 predictor), age (Level 1 predictor), and phase (Level 1 predictor). The remaining parameter included the intercept variance that captured random variation for intercept estimation for different patients, residual variance, and a first-order autoregressive parameter capturing the covariance structure at Level 1.

To calculate the cumulative decrease in total cost, we set the annual expenditure in the year prior to therapy as a reference. We then calculated total annual expenditure for each of the 3 years following treatment by multiplying quarterly expenditure by four. Finally, we subtracted each of the three annual expenditures from the reference expenditure (year prior to therapy) and then added all three differences to get the cumulative decrease in total cost.

The cost of a psychotherapy session for the insurer varies depending on the different treatment options: in-house mental clinics, external private providers, or external public health providers. Therefore, the cost for the insurer ranges between 129 and 240 NIS. We chose the average price of 184.5 NIS per session.

On average, patients in our sample had data covering a span of 4.62 years (SD = 0.7). Missing data were considerably low for a naturalistic study and consisted of only 7.69% of all measurements. In addition, the LMLM model used in the present study allows for unbiased parameter estimates under missing at random assumptions (Gueorguieva & Krystal, 2004). Therefore, we did not impute missing values but rather relied on the robustness of REML models in handling missing data (Shin, Davison, & Long, 2017). Missing data were due to two reasons: first, patients whose psychotherapy occurred at the beginning or the end of our sampling period were missing either pre or post measurements, respectively. Second, patients either joined or left the Clalit Health Services within the period of our sample.

3 | RESULTS

3.1 | Representativeness of the sample

In principle, we believe that the sample has good representativeness and external validity because the mental health centre that was

TABLE 1 Effects of age, gender, number of sessions, and time on cost and utilization of health services

	Variable	Coefficient	SE	*p* value	CI
36-year-old female at the first quarter of 2008	Nonpsychiatric drug costs (NIS)	183.52	31.02	<.01	[122.72, 244.32]
	Psychiatric drug costs (NIS)	16.67	2.91	<.01	[10.97, 22.37]
	Imaging costs (NIS)	76.03	4.31	<.01	[67.58, 84.47]
	Hospitalization costs (NIS)	56.49	5.87	<.01	[45.00, 67.99]
	Outsourced paid referrals (number)	−0.5	0.02	<.01	[0.45, 0.54]
	Visits of GP (number)	1.83	0.05	<.01	[1.74, 1.92]
	Specialist visits (number)	1.2	0.03	<.01	[1.14, 1.26]
	Total cost (NIS)	1,517.10	57.56	<.01	[1,404.28, 1,629.29]
Effect for age (years)	Nonpsychiatric drug costs (NIS)	8.36	1.68	<.01	[5.07, 11.66]
	Psychiatric drug costs (NIS)	−0.34	0.16	<.05	[0.04, 0.65]
	Imaging costs (NIS)	3.57	0.23	<.01	[3.11, 4.03]
	Hospitalization costs (NIS)	0.41	−0.32	.19	[−0.21, 1.04]
	Outsourced paid referrals (number)	−0.02	<0.01	<.01	[0.02, 0.02]
	Visits of GP (number)	−0.05	<0.01	<.01	[0.05, 0.06]
	Specialist visits (number)	−0.02	<0.01	<.01	[0.02, 0.02]
	Total cost (NIS)	55.01	3.14	<.01	[48.87, 61.16]
Effect of gender (male)	Nonpsychiatric drug costs (NIS)	−48.00	53.01	.37	[−151.97, 55.97]
	Psychiatric drug costs (NIS)	19.42	4.96	<.01	[9.68, 29.15]
	Imaging costs (NIS)	−24.61	7.37	<.01	[−39.07, −10.15]
	Hospitalization costs (NIS)	−14.03	10.07	.16	[−33.78, 5.72]
	Outsourced paid referrals (number)	−0.13	0.04	<.01	[−0.20, −0.06]
	Visits of GP (number)	−0.41	0.08	<.01	[−0.56, −0.26]
	Specialist visits (number)	−0.63	0.05	<.01	[−0.73, −0.53]
	Total cost (NIS)	−473.50	98.32	<.01	[−666.34, −280.66]
Effect of time (quarters)	Nonpsychiatric drug costs (NIS)	3.3	1.3	<.05	[0.74, 5.85]
	Psychiatric drug costs (NIS)	−0.57	0.13	<.01	[0.32, 0.82]
	Imaging costs (NIS)	−0.02	0.19	.93	[−0.38, 0.35]
	Hospitalization costs (NIS)	0.02	−0.29	.96	[−0.55, 0.58]
	Outsourced paid referrals (number)	<0.01	<0.01	.88	[0.00, 0.00]
	Visits of GP (number)	0.02	<0.01	<.01	[0.02, 0.02]
	Specialist visits (number)	<0.01	<0.01	.08	[0.00, 0.00]
	Total cost (NIS)	−0.52	2.12	.81	[−4.68, 3.64]
Treatment length (number of meetings)	Nonpsychiatric drug costs (NIS)	0.97	−0.9	.28	[−0.80, 2.73]
	Psychiatric drug costs (NIS)	−0.06	0.08	.48	[−0.22, 0.10]
	Imaging costs (NIS)	0.10	0.13	.41	[−0.14, 0.35]
	Hospitalization costs (NIS)	−0.06	−0.17	.74	[−0.40, 0.28]
	Outsourced paid referrals (number)	<0.01	<0.01	.97	[0.00, 0.00]
	Visits of GP (number)	<0.01	<0.01	.89	[0.00, 0.00]
	Specialist visits (number)	<0.01	<0.01	.45	[0.00, 0.00]
	Total cost (NIS)	0.66	1.67	.69	[−2.62, 3.94]

Abbreviations: GP, general practitioner; NIS, new Israeli shekels.

sampled is one of the main clinics in the capital, and it belongs to the largest health organization in Israel. The centre is also a training institution for students and interns in the various mental health professions, and over the years, dozens of professionals have trained in it. Therefore, the work in the clinic is up to standard and represents the field. All patients who underwent psychotherapy in the clinic within the chosen study period were included in the sample with no subsampling. We excluded those who did not meet inclusion criteria, especially those who received a number of sessions smaller than three in the quarter. We re-evaluated the representativeness of our final

TABLE 2 Averages and standard errors of quarterly cost and utilization of health services 2 years before and 3 years after psychotherapy

	Two before	One before	One after	Two after	Three after
	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)
Nonpsychiatric drug costs (NIS)	182.01 (39.03)	186.61 (36.46)	127.52 (34.38)	166.43 (35.47)	148.93 (39.06)
Psychiatric drug costs (NIS)	20.93 (3.46)	21.03 (3.27)	29.94 (3.08)	31.39 (3.15)	29.37 (3.4)
Imaging costs (NIS)	67.8 (6.34)	73.26 (5.82)	64.57 (5.5)	53.19 (5.88)	59.12 (6.4)
Hospitalization costs (NIS)	44.16 (11.1)	53.21 (10.22)	59.79 (9.7)	37.95 (10.38)	49.63 (11.26)
Outsourced paid referrals (number)	0.45 (0.03)	0.51 (0.02)	0.43 (0.02)	0.38 (0.02)	0.37 (0.03)
Visits of GP (number)	1.57 (0.05)	1.78 (0.05)	1.66 (0.05)	1.56 (0.05)	1.49 (0.05)
Specialist doctor visits (number)	0.81 (0.04)	0.92 (0.04)	0.92 (0.03)	0.89 (0.04)	0.87 (0.04)
Total cost (NIS)	1,302.83 (69.09)	1,496.68 (65.16)	1,348.05 (61.61)	1,148.09 (63.57)	1,077.42 (68.38)

Note: M = mean; SE = standard error.
Abbreviations: GP, general practitioner; NIS, new Israeli shekels.

TABLE 3 Predicted yearly total costs and savings

Time phase	Total cost (NIS)	Savings (NIS)
2 years before	5,211.32	
1 year before	5,986.72	
1 year after	5,392.20	594.52
2 years after	4,592.36	1,394.36
3 years after	4,309.68	1,677.04

Abbreviation: NIS, new Israeli shekels.

sample compared with the original sample according to age and gender. We found the final sample (N = 1,675) to be slightly older than the excluded group (on average 3.55 years older, $t(877) = 4.55$, $p < .01$, $d = 0.23$). The percentage of women in the final sample was greater than their percentage in the excluded group (66% vs. 61%); however, these differences were insignificant and negligible ($\chi_{(1)} = 3.34$, $p = .07$, Cramer's V = 0.04).

3.2 | Effects of age, gender, time, and number of sessions on health services cost and utilization

Before examining changes in utilization and cost of health service variables before and after treatment, we examined the general effects of age, gender, and time on these variables. Overall, we found significant effects for all variables. Therefore, all estimates reported below are controlled for age of participants, gender, and time. More specifically, it was found that as participants grew older, the cost of nonpsychiatric medication, imaging, and total cost grew as well (coefficient = 8.36, $p < .01$, coefficient = 3.57, $p < .01$, and coefficient = 55.01, $p < .01$, respectively). Interestingly, the opposite effect was true with psychiatric medication, GP and specialist visits, and outsourced paid referrals, for which use and cost decreased with age (coefficient = –0.34, $p < .05$, coefficient = –0.05, $p < .01$, coefficient = –0.02, $p < .01$, and coefficient = –0.02, $p < .01$, respectively). Males and females did not differ significantly regarding nonpsychiatric medication and hospitalization costs (coefficient = –48, $p = .37$ and coefficient = –14.03, $p = .16$, respectively). However, the cost of psychiatric medication was greater for males (coefficient = 19.42, $p < .01$), whereas the cost of imaging, visits to GP and specialists, and outsourced paid referrals and total costs were all significantly greater for females (coefficient = –24.61, $p < .01$, coefficient = –0.41, $p < .01$, coefficient = –0.61, $p < .01$, and coefficient = –0.13, $p < .01$, respectively). As for the effects of time, during the period of 2001–2016, overall, there was a significant increase in costs of nonpsychiatric medication (coefficient = 3.3, $p < .05$) and a significant decrease in psychiatric medication (coefficient = –0.57, $p < .01$). In addition, the number of visits to GPs increased significantly during this period (coefficient = 0.02, $p < .01$). We also examined the effect of the number of psychotherapy sessions on health expenses. The effect was not significant in any of the variables. Therefore, we did not include the number of sessions variable in the other models. Table 1 reports more detailed effects of age, gender, time, and the number of sessions on cost and utilization of health services.

Table 2 reports the averages of quarterly costs 2 years before and 3 years after psychotherapy.

Table 3 reports the predicted yearly total cost and average yearly savings in total cost.

On the basis of the cost per session of 184.5 NIS and the average number of sessions of 28.86, the average cost per treatment was 5,324.67 NIS. The cumulative decrease in total medical cost over 3 years was 3,665.92 NIS, equalling 69% of the average cost of psychotherapy.

Table 4 provides a summarized description of the comparisons between the values of the variables in the various years measured.

3.3 | Changes during the pre-psychotherapy period

3.3.1 | Health services utilization

As seen in Table 4 and Figure 1, when comparing between 2 years prior (–2) and 1 year (–1) prior to therapy, the number of outsourced paid referrals and visits to both GP and specialist doctors increased significantly (13.43%, 13.08%, and 12.67%) in the year before therapy.

TABLE 4 Comparisons of total costs and health services utilization 2 years before and 3 years after psychotherapy

Variable	Comparisons	Difference	SE	Difference in %	*p* value	CI
Nonpsychiatric drug costs (NIS)	First before versus second before	4.61	32.95	2.53	.89	[−59.98, 69.19]
	First after versus first before	−59.09	39.73	−31.66	.14	[−136.97, 18.79]
	First after versus second before	−54.48	43.08	−29.93	.21	[−138.92, 29.96]
	Second after versus first before	−20.18	42.32	−10.81	.63	[−103.12, 62.76]
	Second after versus second before	−15.57	45.33	−8.56	.73	[−104.42, 73.27]
	Third after versus first before	−37.68	46.30	−20.19	.42	[−128.43, 53.07]
	Third after versus second before	−33.08	49.16	−18.17	.50	[−129.43, 63.28]
Psychiatric drug costs (NIS)	First before versus second before	0.10	2.28	0.48	.97	[−4.36, 4.56]
	First after versus first before	8.90	3.41	42.33	.01	[2.23, 15.58]
	First after versus second before	9.00	3.76	43.01	.02	[1.64, 16.36]
	Second after versus first before	10.36	3.70	49.23	.01	[3.11, 17.61]
	Second after versus second before	10.46	4.00	49.94	.01	[2.62, 18.29]
	Third after versus first before	8.33	4.06	39.61	.04	[0.38, 16.28]
	Third after versus second before	8.43	4.32	40.27	.05	[−0.03, 16.89]
Imaging costs (NIS)	First before versus second before	5.47	7.22	8.06	.45	[−8.68, 19.61]
	First after versus first before	−8.69	6.98	−11.87	.21	[−22.38, 4.99]
	First after versus second before	−3.23	7.45	−4.76	.66	[−17.83, 11.38]
	Second after versus first before	−20.07	7.38	−27.40	.01	[−34.54, −5.60]
	Second after versus second before	−14.61	7.88	−21.54	.06	[−30.04, 0.83]
	Third after versus first before	−14.14	7.89	−19.30	.07	[−29.60, 1.32]
	Third after versus second before	−8.68	8.40	−12.80	.30	[−25.13, 7.78]
Hospitalization costs (NIS)	First before versus second before	9.05	14.59	20.49	.54	[−19.56, 37.65]
	First after versus first before	6.58	13.84	12.37	.63	[−20.55, 33.71]
	First after versus second before	15.63	14.53	35.39	.28	[−12.85, 44.10]
	Second after versus first before	−15.26	14.38	−28.68	.29	[−43.45, 12.93]
	Second after versus second before	−6.21	15.07	−14.07	.68	[−35.75, 23.33]
	Third after versus first before	−3.58	15.06	−6.72	.81	[−33.09, 25.94]
	Third after versus second before	5.47	15.74	12.39	.73	[−25.38, 36.32]
Outsourced paid referrals (number)	First before versus second before	0.06	0.03	13.43	.02	[0.01, 0.11]
	First after versus first before	−0.08	0.03	−14.94	<.01	[−0.13, −0.03]
	First after versus second before	−0.02	0.03	−3.52	.57	[−0.07, 0.04]
	Second after versus first before	−0.13	0.03	−25.91	<.01	[−0.19, −0.08]
	Second after versus second before	−0.07	0.03	−15.97	.02	[−0.13, −0.01]
	Third after versus first before	−0.14	0.03	−26.79	<.01	[−0.20, −0.08]
	Third after versus second before	−0.08	0.03	−16.96	.02	[−0.14, −0.01]
Visits of GP (number)	First before versus second before	0.21	0.04	13.08	<.01	[0.13, 0.29]
	First after versus first before	−0.12	0.04	−6.64	.01	[−0.20, −0.03]
	First after versus second before	0.09	0.05	5.58	.07	[−0.01, 0.18]
	Second after versus first before	−0.22	0.05	−12.58	<.01	[−0.32, −0.13]
	Second after versus second before	−0.02	0.05	−1.15	.73	[−0.12, 0.09]
	Third after versus first before	−0.29	0.05	−16.40	<.01	[−0.40, −0.19]

TABLE 4 (Continued)

Variable	Comparisons	Difference	SE	Difference in %	*p* value	CI
	Third after versus second before	−0.09	0.06	−5.46	.15	[−0.20, 0.03]
Specialist visits (number)	First before versus second before	0.10	0.04	12.67	.01	[0.03, 0.18]
	First after versus first before	0.01	0.04	0.93	.84	[−0.07, 0.09]
	First after versus second before	0.11	0.04	13.71	.01	[0.03, 0.20]
	Second after versus first before	−0.02	0.04	−2.53	.60	[−0.11, 0.06]
	Second after versus second before	0.08	0.05	9.82	.09	[−0.01, 0.17]
	Third after versus first before	−0.04	0.05	−4.69	.36	[−0.14, 0.05]
	Third after versus second before	0.06	0.05	7.38	.24	[−0.04, 0.16]
Total cost (NIS)	First before versus second before	193.85	60.29	14.88	<.01	[75.69, 312.02]
	First after versus first before	−148.63	66.07	−9.93	.02	[−278.13, −19.13]
	First after versus second before	45.22	70.89	3.47	.52	[−93.73, 184.17]
	Second after versus first before	−348.58	70.50	−23.29	<.01	[−486.76, −210.40]
	Second after versus second before	−154.73	75.82	−11.88	.04	[−303.35, −6.11]
	Third after versus first before	−419.26	76.81	−28.01	<.01	[−569.81, −268.71]
	Third after versus second before	−225.41	82.55	−17.30	.01	[−387.22, −63.60]

Abbreviations: GP, general practitioner; NIS, new Israeli shekels.

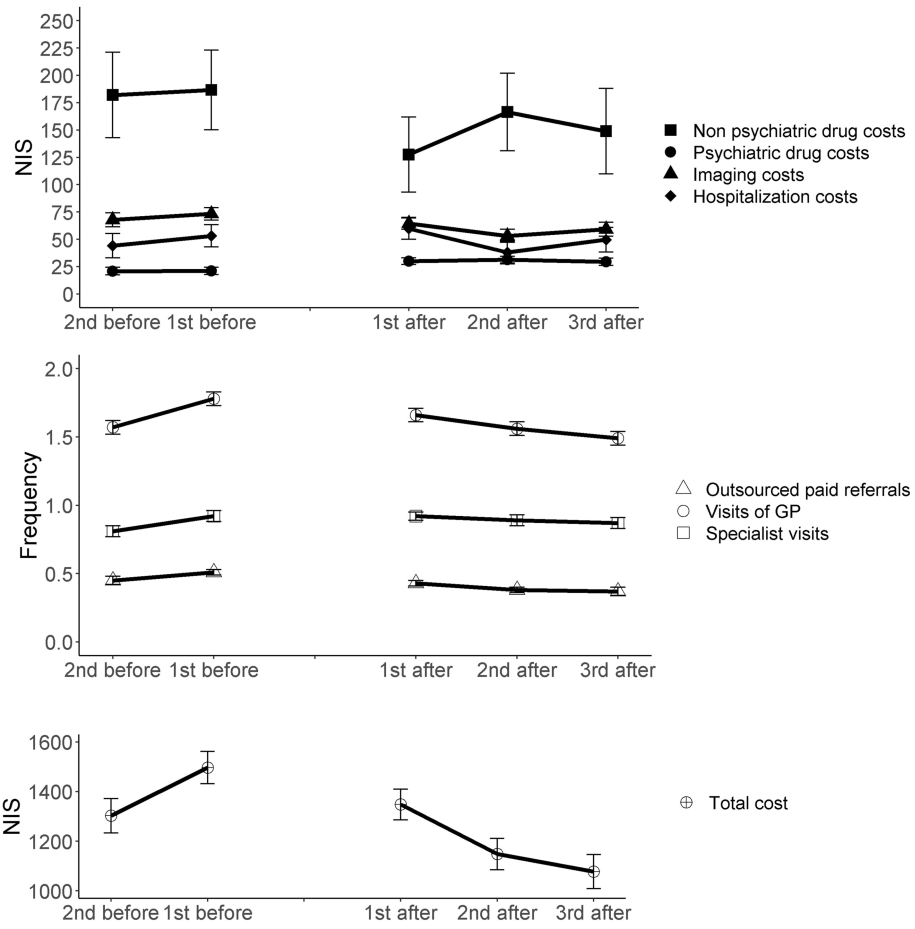

FIGURE 1 Predicted quarterly total costs and health services utilization 2 years before and 3 years after psychotherapy

3.3.2 | Health services cost

The increases in somatic medication, psychiatric medication, imaging, and nonpsychiatric hospitalization costs between year (−2) and year (−1) prior to therapy were not found to be significant (2.53%, 0.48%, 8.06%, and 20.49%, respectively); however, the total cost did increase significantly (14.88%).

3.4 | Changes from pre-psychotherapy to post-psychotherapy

3.4.1 | Health services utilization

In the first year following psychotherapy (+1), the number of outsourced paid referrals and GP visits decreased significantly (14.94% and 6.64%, respectively) compared with utilization 1 year prior to psychotherapy (−1). However, the change in the number of specialist visits (0.93%) was not significant.

When comparing post-psychotherapy (+1) with baseline utilization, 2 years before therapy (−2), the number of outsourced paid referrals was not significantly lower than the baseline level (3.52%). The number of specialist visits was still significantly higher than baseline (13.71%), whereas the number of GP visits was nearly significantly higher than baseline (5.58%).

3.4.2 | Health services cost after psychotherapy

The visible decrease in somatic medication cost from the year before (−1) to the year following (+1) psychotherapy (31.66%) was not significant, nor were the differences in imaging and nonpsychiatric hospitalization costs (11.87% decrease, and 12.37% increase, respectively); however, the total cost did decrease significantly (9.93%). A significant increase in the cost of psychiatric medication was also found (42.33%).

When compared with the baseline of 2 years before therapy (−2), no significant differences were found in somatic medication, imaging, or nonpsychiatric hospitalization (29.93% decrease, 4.76% decrease, and 35.39% increase, respectively). No significant difference was found in total cost (3.47%). The increase in psychiatric medication was significantly higher than the baseline (43.01%).

3.5 | Changes over time during post psychotherapy period

3.5.1 | Health services utilization

In the second year following therapy (+2), the numbers of outsourced paid referrals and visits to doctors (both GP and specialist) continued to decrease compared with the year before (−1) psychotherapy (25.91%, 12.58%, and 2.53%, respectively). Changes in outsourced referrals and GP visits were significant.

Compared with the baseline of 2 years before therapy (−2), both GP and specialist visits were no longer significantly different than baseline (−1.15% and 9.82% difference, respectively), whereas the number of outsourced paid referrals decreased significantly below baseline level (15.97%).

In the third year following therapy (+3), the reduction in utilization was maintained. As in the previous years, the decrease in the number of paid referrals and GP visits compared with the year before psychotherapy (−1) was significant (26.79% and 16.4%, respectively), whereas the decrease in specialist visits was not significant (4.69%).

Compared with the baseline of 2 years before therapy (−2), both GP and specialist visits remained nonsignificantly different than baseline levels (5.46% lower and 7.38% higher, respectively). Outsourced paid referrals remained significantly lower than baseline levels (16.96%).

3.5.2 | Health services cost after psychotherapy

In the second year following therapy (+2), the decrease in the cost of imaging continued and became significant (27.4%) compared with the year before therapy (−1). The significant increase in the cost of psychiatric medication continued (49.23%). The total cost was significantly lower (23.29%).

Compared with the baseline of 2 years before therapy (−2), psychiatric medication cost was significantly higher than at baseline (49.94%). Imaging cost was nearly significantly lower than the cost at baseline (21.54%). The total cost was significantly lower than at baseline (11.88%).

In the third year following psychotherapy (+3), the cost of imaging was close to significantly lower than it was 1 year prior to therapy (19.3%). The cost of psychiatric medication remained significantly higher than the cost both the year before therapy and at baseline (39.61% and 40.27%, respectively). Imaging cost remained insignificantly different from baseline (12.8%). Somatic medication and nonpsychiatric hospitalization costs were not significantly different from their cost 1 year before therapy or at baseline. The total cost was significantly lower than 1 year before therapy and baseline level (28.01% and 17.3%, respectively).

4 | DISCUSSION

We found changes in the utilization and cost of health care associated with outpatient psychodynamic psychotherapy, thus proving all three hypotheses:

1. An increase in health care costs and utilization prior to psychotherapy was in fact found by comparing cost and utilization 2 years with 1 year prior to therapy.
2. A decrease in health care costs and utilization after psychotherapy was also found by comparing cost and utilization 1 year prior to therapy and 1 year following therapy.

3. The reduction in cost and utilization was maintained for a meaningful period of time (2 and 3 years) after therapy, and in fact, this reduction increased over time so as to achieve below baseline levels by the third year after therapy.

In addition, we found significant effects of age, gender, and time on both health service cost and utilization. Therefore, controlling for these variables improved the predictive quality and findings of this study. These findings reinforce the need to take these variables into account in future studies addressing the efficiency of psychotherapy.

The number of psychotherapy sessions was not found to be a clear predictor of any of the cost or utilization variables. The most plausible explanation in our eyes is that in this naturalistic study, patients received their optimal number of sessions needed on the basis of clinical needs and clinicians' discretion. Another possible explanation is that even a very small number of psychotherapy sessions are sufficient to have a beneficial effect on health care use. In addition, the limitations of the linear model must be taken into account because the relationship between the number of sessions and the cost and usage variables may not be linear. Finally, psychotherapy itself may not be the influencing factor but rather a related factor such as the placebo effect of treatment or the mere passage of time.

4.1 | Pretherapy

In the year prior to therapy, there was an increase in somatic investigation and treatment. Noteworthy is the statistically significant increase in noninvasive investigation such as primary care (GP) and specialist visits and outsourced paid referrals. There was a nonsignificant increase in more invasive interventions such as imaging, hospitalization, and somatic medication. The total cost of health care increased in this period significantly. These findings are consistent with other studies (Altmann et al., 2016; Borus et al., 1985; Holder & Blose, 1992; Kraft et al., 2006) and may represent the known association between mental disorders and increased somatic complaints (somatization) and investigation. The increased medical care utilization between 2 years (i.e., baseline) and 1 year prior to psychotherapy may indicate an increase in psychological distress. Furthermore, these findings may suggest primary care physicians view an increase in somatic complaints, especially if unexplained (MUS), as an indication of the possible presence of mental symptoms, warranting further investigation into patients' mental state while still cautiously pursuing medical investigation.

4.2 | Pretherapy to posttherapy

In the year after psychotherapy, there was a posttherapy, statistically significant reduction in the number of GP visits in outsourced paid referrals and total cost. In addition, there was a reduction that did not reach statistical significance in referrals to specialists, the cost of somatic medication, and imaging. These findings may indicate a true reduction in patients' somatic symptoms or at least an increase in patients' tolerance of them, hence the reduction in doctors' visits. They may also indicate a change in primary doctors' attitudes towards patients' complaints, with growing confidence in their ability to maintain these patients within a primary care setting, hence the significant reduction back to baseline in outsourced referrals and the reduction trend in referrals to specialists, both provided solely by primary care doctors.

4.3 | Posttherapy changes over time

By the second year after psychotherapy, visits to doctors (both GP and specialist) and cost of imaging had returned to baseline levels, whereas the number of outsourced paid referrals and the total cost decreased significantly below baseline levels. These changes were maintained into the third year after therapy. A similar pattern of changes was found in the cost of somatic medication and nonpsychiatric hospitalization, but these changes were not statistically significant. These findings indicate the significant and sustained posttherapy reduction in the utilization and cost of many medical interventions. Furthermore, some reductions continued to increase in the years after therapy, indicating a possible long-term dynamic effect of therapy. The findings are consistent with Berghout et al.'s (2010) results regarding the increase in saving during the second year after long-term psychoanalytic treatment.

In the year after therapy, we observed a significant increase in the cost of psychiatric medication compared with baseline. This increase was sustained over time and remained high after the completion and into the third year after therapy. Because all patients undergoing psychotherapy had an initial ICD-10 diagnosis of mental disorder, as a prerequisite to treatment, we suggest some had symptoms and dysfunction severe enough to warrant the initiation of psychiatric medication in addition to psychotherapy. One may intuitively argue that psychiatric medication is the main contributing factor to the changes found in this study. However, one must remember that this is a correlative and not a causality study; hence, there is a correlation between the administration of psychiatric medication and the findings. But the sustained increase in psychiatric medication use may be explained by a tendency towards continuous administration of psychiatric medication based more on pretherapy and premedication mental state severity rather than on the favourable outcome of psychotherapy. In addition, given an increase in psychopharmacological treatment in parallel with psychological treatment, it is difficult to isolate the effect of psychotherapy alone or medication alone on the cost and use of health services. Further studies are needed to compare the effect of psychological treatment with the effect of psychopharmacological treatment and the effect of combined treatment on health expenditure.

The additional cost of psychiatric medication should be seen as an additional expense over an unknown length of time. From the insurer's point of view, these findings also suggest a possible clinical

recommendation to continuously reassess the clinical necessity of psychopharmacological treatment, especially when undergoing successful psychological treatment.

Overall, we found a meaningful cumulative saving of 69% of the average cost of psychotherapy over 3 years. It is important to remember four important facts:

First, one might speculate that without psychotherapeutic intervention, the increase in health care utilization and cost, found in the year prior to therapy, might continue or even increase.

Second, the cumulative savings calculated is limited to 3 years after therapy. On the basis of the trend of increased saving, it is possible that the real cumulative saving is greater.

Third, our study did not include the possible cost savings on psychiatric hospitalization.

Finally, there are other economic variables found to be associated with psychotherapy, such as a decrease in disability benefits and sick leave days that were not included in the present study. Thus, it is likely that the economic benefits of psychotherapy for the medical insurer, the state, and the patient are greater than estimated in the present study.

We found three important differences between our study and other previous studies in the field:

1. In some studies (Altmann et al., 2016; Kraft et al., 2006), posttreatment reduction in health care consumption and cost remained above or returned to baseline levels for several parameters. In our study, posttherapy reduction reached pretherapy baseline for all variables except specialists' visits, which did finally reach baseline levels in the third year of posttherapy. Furthermore, for some parameters (number of paid referrals and total cost), posttherapy levels even surpassed baseline levels from the second year posttherapy and on. We suggest the robustness of our findings can be explained by our controlling for age, year, and gender.
2. Most previous studies did not differentiate between psychiatric and somatic medication. Indeed, in the Altmann et al. (2016) study, total medication consumption increased in the years following treatment. Others only assessed change in the use of psychiatric medication following therapy (Abbass & Katzman, 2013). In our study, we differentiated between psychiatric and somatic medication and found opposite trends: a posttherapy increase in the use of psychiatric medication and a reduction in the somatic medication use. We argue that our findings stress the importance of differentiating between somatic and psychiatric medication.
3. Previous studies examined the change in hospitalization days without differentiating between psychiatric and general hospitalization (Abbass & Katzman, 2013; Altmann et al., 2016; Altmann et al., 2018). In Altmann et al.'s (2016) study, the number of hospitalization days increased significantly in the year before treatment and decreased thereafter. Our study examined only somatic hospitalization and found a similar pattern of increase prior to therapy and a decrease thereafter. However, our findings did not reach statistical significance. We maintain, similarly to the importance of differentiating between psychiatric and somatic medication, that we must differentiate between psychiatric and somatic hospitalization. We suggest the significant decrease in hospitalization days found in some studies posttherapy may be attributed mainly to a reduction in psychiatric hospitalization, and because we assessed somatic hospitalization only, we found only a trend after therapy. Indeed, in their recent study, Amir and Shefler (2020) found a significant reduction in psychiatric hospitalization days after the completion of psychotherapy. This not only supports our suggestion to differentiate between the effects of psychotherapy on the two kinds of hospitalization but also offers an additional saving in health care cost after therapy in the form of a reduction in psychiatric hospitalization. If applied to our study, we may speculate that this reduction in psychiatric hospitalization would further enhance the effect of psychotherapy on reducing total health cost

The current study has noteworthy strengths:

1. Ours was an efficacy studies performed in a “real life” naturalistic setting in the largest health service organization in the country. All psychotherapy was psychodynamic oriented and provided free of charge in a major outpatient mental health clinic. Data were collected from the most reliable source: patients' active medical records. All of these factors contribute to the study's very good external validity.
2. The large sample size of this study is of particular importance when addressing the effect of psychotherapy on health care cost and utilization for it can deal with both large variance of data and cases of extreme expenses (e.g., cancer treatment or organ transplant).
3. Choosing a number of outcome variables that together comprise cost and utilization of health services in addition to a single total cost variable has several advantages. (a) Because only some variables changed between pretreatment and posttreatment, a greater number of variables allows for a higher resolution of the changes. (b) The magnitude of change in variables is also not uniform. (c) When using only a single sum cost variable, an increase in one component (psychiatric drugs) and a decrease in another (outsourced paid referrals) may cancel each other out. (d) It allows for a significant distinction between expenses more directly related to mental state or affected by psychological treatment than other unrelated expenses. (e) More detailed findings may have clinical implications and not only financial ones. (f) Curtain variables may serve as early indicators to family physicians that patients may be suffering from mental distress that require diagnosis and treatment. (g) There are also benefits to analysing and displaying raw data before translating it into monetary cost due to variability in health care and pricing systems. In Israel, psychotherapy sessions are priced double that of GP visits, whereas in other countries, the reverse is true. Thus, in places where GP appointments are priced higher than psychotherapy sessions, a 16.4% reduction in the number of GP visits will translate to greater cost-effectiveness of therapy.
4. Our study used data collected over a long period of time (16 years) and was analysed in a high resolution of time (quarters). This raises

the validity of our findings by reducing the effect of random or unique occurrences such as changes in health policy.
5. Another advantage of the current study is the use of statistical control over known explanatory variables such as age, gender, and time in order to isolate the true effect of psychotherapy alone.
6. Finally, the advanced LMLM statistical approach used in this study ensures the high quality of results by accounting for repeated measure effect and missing data.

4.3.1 | Study limitations

The design of the study is longitudinal without a control group or randomization. Hence, causal inferences could not be made. Alternative explanations may include spontaneous recovery, regression to the mean, pharmacological effect, or other variables, which were not controlled for, given the naturalistic setting. Therefore, we encourage future studies to explore the effects of psychodynamic therapy on health care costs in randomized controlled trials. Another limitation concerns the focus of our study on psychodynamic therapy. Further research is needed to examine the health cost reductions with other forms of therapy and possibly compare the various forms of therapy with each other. Also, there is a variation in the manipulation under investigation; treatment was not structured, and therapy length varied considerably between patients. In addition, we did not use structured questionnaires to assess symptoms and severity. Although we chose to include several outcome variables in order to increase resolution and understanding, because we performed a large number of analyses, the possibility of alpha inflation cannot be ruled out. Finally, the models we used did not account for therapist level or effect.

Health care systems are forever attempting to optimize their resources and reduce unnecessary testing and treatment while still providing the most accurate care. Mental distress can manifest itself in the form of somatization, causing patients to frequent their primary care physicians. They, in turn, may erroneously explore MUS by sending patients to specialists, have them undergo invasive testing or hospitalization, and even take unnecessary medication instead of exploring their patients' mental state. Our study confirms this, for in the year prior to therapy, we found a rise in utilization and cost of physical health care. We also know these patients went on to be diagnosed with a mental disorder, warranting psychotherapy, thus confirming the presence of a mental disorder at the root of their physical complaints.

Psychotherapy, in its many forms and schools of thought, is a potent treatment that can improve mental health and wellbeing with minimal side effects. In addition to the personal benefit of psychotherapy, it can reduce health care utilization and cost. Indeed, in our study, we found a sustained and even increasing reduction in patients' use of health care services after therapy. This reduction was maintained for several years after therapy.

This study has important implications for primary care doctors, policymakers, and health care providers. For the doctors, it is important to remember that mental and physical health are correlated and many patients with mental disorders will actually present themselves with unexplained physical complaints. A rise in health complaints along with health care utilization should alert doctors to explore patients' mental state. These patients should then be referred for mental assessment rather than further medical exploration, and psychotherapy should be the preferred intervention rather than medical hospitalization or medication.

For the health care policymakers and providers, this study is important for it suggests the broader longstanding economic benefits of psychodynamic psychotherapy in reducing medical health care use and cost. In health care systems that tend to compartmentalize the various forms of medical treatment, this study calls for a greater holistic view of patients both in the therapeutic and the financial aspects. We propose that policymakers and providers implement several steps directed at optimizing therapeutic and financial health care. (1) General public awareness of the association between physical and mental health and physical complaints as a possible indicator of mental distress should be increased. (2) A flagging system in patients' medical files alerting doctors of any increase in health complaints and health care utilization should be introduced. (3) Once flagged, both doctors and patients should be automatically provided with information on the association between medical and mental health. This information should include the possibility of unaddressed mental distress. (4) Mental health assessment using rating scales should be sent automatically to both clinicians and patients and their results integrated in their care. (5) We suggest developing an algorithm for primary care that gives for the referral for mental assessment and treatment. (6) We suggest increasing availability and accessibility to psychotherapy, determining the acceptable waiting period for therapy, and shortening waiting lists accordingly.

Altmann et al. (2018) found that the form of therapy termination (premature vs. as scheduled) impacted the decrease in health care costs. We suggest a further differentiation between “curative therapy” aimed at eliminating symptoms while inducing remission of the mental disorder versus “maintenance therapy” aimed at relieving symptoms and preventing deterioration. Termination of therapy in the former type is likely to indicate a significant improvement and a deep internal change followed by an expected maintained reduction in health care consumption, whereas termination of treatment in the latter type may exacerbate mental and somatic symptoms, leading to increased health care consumption. The proof is in the pudding. Our results clearly show that psychotherapy is associated with reduced health care costs. This is the first step. Future studies will have to address the different types of psychotherapy, termination of therapy, and questions of internal validity and will have to control for more variables such as demographic and socio-economic characteristics. Further research must provide a deeper understanding of the importance of integrating psychotherapy as a mainstream therapeutic tool in general medicine and hopefully find the optimal way to do so.

CONFLICT OF INTEREST

None to declare.

DATA AVAILABILITY STATEMENT

Date available on request from the authors.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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