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A register-based study of long-term healthcare use before and after psychotherapy

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Background: Psychotherapeutic treatment for non-psychotic disorders is associated with significant reduction in patients' symptoms, and therefore it is believed that treatment improves health and decreases the need for additional healthcare. However, little is known about long-term changes in utilization of healthcare services. *Aim:* To investigate long-term changes in utilization of public healthcare services for patients referred to psychotherapeutic treatment. *Methods:* A pre–post study with 761 consecutive patients and 15,220 matched individuals in a matched population reference group. Data from a comprehensive set of healthcare services were collected from central registries for 4 years prior to intake and for 4 years after completion of treatment. *Results:* Of the 761 patients, 216 did not show up for treatment and 545 completed treatment. Completer patients achieved a substantial reduction in symptoms (effect size, ES = 0.99). However, completer patients increased their use of all healthcare services by 296% (ES = 0.58) in the 4th year pre–post comparison, while the reference group increased usage by 99% (ES = 0.23). Completer patients had significantly higher increase in contacts with psychiatric hospitals ($P < 0.008$), contacts with primary care psychologists ($P < 0.001$), psychotropic medication ($P < 0.001$) and contacts with primary care physicians ($P < 0.001$) than the reference group at the 4th year pre–post comparison. *Conclusion:* Over a long-term period, patients who completed psychotherapeutic treatment increased utilization of healthcare services. Studies are needed to clarify how and why psychotherapeutic treatment does not necessarily lead to a reduction in the utilization of healthcare services for the average patient and to evaluate other potential interventions for patients with mental problems and include efficiency studies in this evaluation.

• *Health services, Mental disorders, Psychotherapy, Registries, Utilization.*

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Outcome of psychotherapy has been researched for decades (1), and an increasing number of meta-analytic studies confirm that psychotherapeutic treatment is associated with a significant reduction in symptoms (2) and is cost-effective compared with other treatment modalities (3). Due to the rising costs of healthcare (4), a particular focus of interest has been the extent to which psychotherapeutic intervention changes utilization of healthcare services over time (i.e. efficiency studies). Two reviews found that more than 85% of the reviewed studies reported significant reduction in usage of health services (5, 6). In the review by Mumford et al. (6), the mean size of reduction was 10.4% in randomized clinical trials and 33.1% in naturalistic studies of utilization of health services after completed psychotherapy. Reviews of interventions for selected diagnoses report even higher reduction rates up to 85% (7).

A central limitation of currently available efficiency studies is that the majority are based on short observation periods: typically from intake to a few months after completion of treatment. As a consequence, the immediate pretreatment stage, where mental problems have emerged and forced the patient to seek treatment, is compared with the immediate post-treatment stage; this comparison will in most cases show a decline. In contrast, a Swedish study by Lazar and colleges (8) investigated the utilization of healthcare services over 3 years for patients ($n = 756$) treated by private psychotherapeutic practitioners. They found that patients increased their use of medicine, outpatient mental health services and hospitalization, and did not change their use of somatic health services after treatment. These conflicting results may be due to the length of the observation. Thus, a definite conclusion about the impact of psychotherapeutic treatment on healthcare utilization should not be made

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without taking the length of the observation period into account.

Other methodological issues hidden in efficiency and outcome studies are the large proportion of patients referred to therapy who fail to attend treatment and the large proportion of patients who do not respond to treatment. Up to 60% of all referred patients do not show up for treatment (9, 10). One reason may be spontaneous remission prior to therapy (11), while another reason may be negative patient attitudes to psychotherapy (12). Regarding non-response, a recent Swedish study, conducted in a setting similar to our present study, found that more than 35% of treated patients did not achieve significant clinical improvement in symptoms and that 60% of patients remained dysfunctional after treatment completion (13). A high percentage of non-responding patients is also reported in published reviews (14). Non-responding patients use more healthcare services after completion of treatment than responding patients (15). The high number of no-show patients and non-responding patients reported in the literature question the net effectiveness of psychotherapy for the majority of patients.

Two further methodological problems should be considered in the efficiency studies. The majority of efficiency studies either used days of inpatient treatment or retrospective self-reports as outcome measures, which may introduce bias. Hospitalization primarily reflects the presence of severe mental problems (5), whereas contacts with primary care physicians or other outpatient contacts is a more adequate indicator of general health status and utilization of healthcare services for the average patient (16, 17). Therefore, evaluation of healthcare usage for patients with common mental disorders should be based not only on the evaluation of inpatient treatment. Self-report is acceptable for recalling a small number of recent incidences, such as hospital visit (18), but studies on the concordance between self-reports and register-based data show increased underreporting in patients with a higher number of incidences and with a longer recall period. Therefore, self-reported data are less valid than register data when dealing with a long time span or a high number of incidences (18). In Denmark, opportunities for register-based studies are optimal because the National Board of Health and Statistics Denmark registers all usage of healthcare services and because demographic data and socio-economic data can be linked to information about health and health services utilization via administrative registries.

Aim

The aim of this study was to investigate the long-term outcome of non-psychotic patients referred to psychotherapy with respect to utilization of healthcare services based on a comprehensive set of register-based data on mental and somatic health services.

Materials and methods

Setting

Stolpegaard Psychotherapy Centre, Mental Health Services, Capital Region of Denmark provides treatment for adults suffering from non-psychotic conditions, including affective disorders, nervous disorders, eating disorders, and personality disorders. The Centre offers outpatient (approximately 80%) and inpatient (approximately 20%) treatment in a 5-day unit, primarily as group psychotherapy. Cognitive behavioral group therapy is offered to patients with anxiety and depression, while narrative group therapy is offered to patients with eating disorders. Patients with personality disorders primarily receive psychodynamic group therapy. A typical format of group therapy is 16–20 sessions of 2.5-h duration. Inpatient treatment also includes milieu therapy. Patients not suitable for group therapy receive short-term individual therapy for a mean of 10 sessions.

Treatment status

No-shows are patients who came to the assessment interview and were offered treatment, but did not show up for their first and later treatment sessions and did not attempt to change the appointment or notify the centre. *Drop-outs* are patients who started their treatment, but stopped treatment without agreement with the therapists. *Completers* are patients who started their treatment and participated in the full program or had more than six sessions and stopped in agreement with the therapists.

Treatment response

Response or non-response was assessed using the model proposed by Jacobson & Truax (19), which requires both a statistically reliable change in symptoms and a symptom level, which is within the functional range of a non-patient population. Patients were defined as treatment *responders* or *non-responders* based on changes on the Global Severity Index (GSI) from the Symptom Check List-Revised (SCL-90-R). SCL-90-R is a strongly validated questionnaire designed to measure psychiatric symptoms and current psychological distress (20) and is one of the most commonly used outcome measures in psychotherapy. The Danish cut-off scores for non-cases are 1.08 for women and 0.87 for men (21).

Patient sample

Nine hundred and forty-four consecutive patients referred to and offered psychotherapeutic treatment at Stolpegaard Psychotherapy Centre from January 1, 2004 to December

31, 2005 were eligible for the study. Patients were primarily referred from their own general practitioners (about 4/5 of the patients) and the remaining from other hospitals, psychologists and social consultants. *A priori*, drop-out patients ($n = 102$) were excluded to avoid patients not clearly belonging to either of the two categories of no-show or completers. It was also decided *a priori* to exclude 81 patients of non-Danish origin to avoid matching problems. In total, 761 consecutive patients were included in the study (Table 1a). The first patient enrolled in the study was assessed on January 5, 2004 and the last patient completed treatment on December 29, 2005.

Reference sample

For each patient, 20 individuals from the Central Population Register in Denmark were matched according to Danish ethnicity, geographic area, sex and birth date. In all, 15,220 individuals were included in the reference sample. No exclusions were made.

Design

This was a pre–post study with a matched reference sample comprising 20 matched individuals for each patient. The utilization of healthcare services was counted annually for each individual patient 4 years before intake (date of assessment interview) and 4 years after completed treatment (date of discharge). No-show patients were analyzed for the average length of the intervention period inclusive of waiting time for completer patients—in our sample 214 days. The utilization of healthcare services by individuals in the reference sample was counted annually using the same dates and period as their matched patient. The period of observation was 10 years, from January 2, 2000 to December 29, 2010.

Patient and reference data on healthcare services

Denmark has a tax-financed public healthcare system and all healthcare utilizations are registered in central registries. For utilization in mental and somatic healthcare services, data on the same four parameters were analyzed: contacts with hospitals, inpatient days in hospitals, primary care contacts and benefits, and dispensed volume of medication. The registries and variables are described below:

- *National Register of Patients*—This contains information on all admissions to secondary healthcare services (e.g. hospitals). We analyzed the number of outpatient contacts and number of inpatient days separately for somatic and psychiatric hospitals.
- *Public Health Insurance Register*—This contains information about all contacts with primary healthcare services (e.g. general practitioners, specialists, laboratory tests, etc.) We counted the total number of contacts and number of benefits with the exclusion of contacts with psychologists and psychiatrists, which were counted separately.
- *Register of Medicinal Product Statistics*—This contains information about all sales of prescribed medications in Denmark listed and grouped according to the anatomical therapeutic chemical (ATC) classification system. We collected the dispensed volume of medicine per year for five ATC groups: alimentary tract and metabolism (A), cardiovascular (C), musculoskeletal (M), respiratory (R) and nervous system (N). A, C, M and R were pooled together and reported in the category "Somatic medication". For medicine aimed at the nervous system (N), the dispensed volume was analyzed for anxiolytics (N05B), hypnotics and sedatives (N05C) and antidepressants (N06A). N05B, N05C and N06A were pooled together and reported in the category "Psychotropic medication".

Patient data collected from Stolpegaard Psychotherapy Centre

We obtained data on the current level of psychological distress using the SCL-90-R before and after psychotherapeutic intervention at Stolpegaard Psychotherapy Centre.

Ethics

The study was registered at the Danish Data Protection Agency. As the study was not invasive, approval from the ethical committee system was not necessary. All patients were informed in writing about the data collection and gave consent to participate.

Table 1a. Diagnostic data.

	Mood disorders, F30–39 (%)	Neurotic disorders, F40–49 (%)	Behavioral syndromes, F50–59 (%)	Disorders of personality, F60–69 (%)	Missing data (reference group: no diagnosis)
Completer ($n = 545$)	120 (22%)	249 (46%)	104 (19%)	65 (12.0%)	7 (1%)
Responder ($n = 228$)*	62 (28%)	100 (45%)	38 (17%)	23 (10%)	
Non-responder ($n = 201$)*	47 (24%)	83 (42%)	41 (21%)	25 (13%)	
No-show ($n = 216$)	35 (16%)	110 (51%)	34 (16%)	31 (14%)	6 (3%)
Reference ($n = 15.220$)	21 (0.14%)	31 (0.20%)	12 (0.08%)	22 (0.14%)	15.134 (99.4%)

*116 patients had missing data on SCL-90-R.

Statistical analysis

Data were analyzed using PASW (IBM-SPSS) version 18. The mean values and standard deviations (*s*) of the number of healthcare services were calculated for the patient groups and the reference sample. The percent change and effect size (ES) were calculated for GSI before and after treatment and the changes in healthcare utilization between the 4th year pre- and post-treatment. Effect sizes were calculated using Glass's formula: $ES = (mean_{pre} - mean_{post})/s_{pre}$. According to Cohen, $ES < 0.5$ is considered a small effect, $ES = 0.5–0.8$ a moderate effect, and $ES > 0.8$ a large effect (22).

Independent *t*-tests were performed to test the difference in use of healthcare services between the patient and the reference groups for the 4th year pretreatment and 4th year post-treatment. Paired *t*-tests were performed to analyze changes in use of healthcare services within the patient and the reference groups for the 4th year pre–post-treatment comparison.

Differences in changes in the use of healthcare services over time between the patient and reference groups were analyzed with analysis of covariance (ANCOVA) for the 4th year pre–post-treatment comparison. Age, sex and baseline usage of healthcare services at the 4th year before treatment were included as covariates in ANCOVA. Significant results in ANCOVA were followed by planned contrasts to evaluate which patient group had significant change.

Results

Of the 761 patients included in the study, 216 patients did not show up for treatment and 545 patients completed treatment. Treatment outcome data (SCL-90-R) were available for 429 completer patients, of which 228 patients were responders and 201 non-responders (Table 1b), but missing for the remaining 116 patients. There were no difference in sex (χ^2 (1, $n = 545$) = 2.1, $P = 0.157$) or diagnosis (χ^2 (3,$n = 536$) = 7.8, $P = 0.051$) between patients with and without a SCL-90-R outcome measure, although they differed in age. Patients without SCL-90-R data were younger (mean = 31.1 ± 10.4) than the rest (mean = 33.9 ± 10.7), ($t(543) = -2.7$, $P = 0.006$). Table 1b shows pre–post GSI scores for responders and non-responders.

Tables 2–4 show results for between-group *t*-test, within-group *t*-test, and ANCOVA. Due to the large number of results, the specific values for *t*-tests and ANCOVA are only reported in the tables.

Reference sample

Reference data for utilization of healthcare services were obtained from the reference sample. In the 4th year pre–-post comparison the average increase was 99% (ES = 0.23) on the eight healthcare parameters; seven showed significant increase (Table 3).

Completers

Between-group *t*-test showed that completer patients had significantly more utilization of healthcare services than the reference group on five of eight healthcare parameters at the 4th year pretreatment and on five of eight parameters at the 4th year post-treatment (Table 2). Within-group *t*-test showed that all eight parameters increased significantly. The average increase was 296% (ES = 0.58) (Table 3). ANCOVA showed that the increases of four parameters were significantly larger than the increases in the reference group (Table 4).

No-shows

Between-group *t*-test showed that no-shows had a significantly larger utilization of healthcare services than the reference group on four of eight healthcare parameters at the 4th year pretreatment and on five of eight parameters at the 4th year post-treatment (Table 2; Fig. 1).

Within-group *t*-test showed that five out of eight parameters increased significantly. The average increase was 148% (ES = 0.39) (Table 3). ANCOVA showed that two increases were significantly greater than the increase in the reference group (Table 4).

Discussion

The purpose of the present study was to investigate long-term changes in utilization of healthcare services among patients referred to psychotherapeutic treatment. Comparison

Table 1b. Outcome data on Global Severity Index (GSI score) from Symptom Check List-Revised (SCL-90-R).

	GSI score pre, mean (*s*)	GSI score post, mean (*s*)	Difference mean (*s*)	% change	ES
Completer ($n = 429$)*	1.29 (0.58)	0.70 (0.53)	0.58 (0.59)	45.0%	0.99
Responder ($n = 228$; 53%)	1.39 (0.50)	0.43 (0.29)	0.96 (0.48)	68.8%	1.90
Non-responder ($n = 201$; 47%)	1.18 (0.64)	1.03 (0.57)	0.16 (0.38)	13.5%	0.25

s, standard deviation.
*116 patients had missing data on SCL-90-R.

Table 2. Results of *t*-tests between groups.

	4th year pretreatment				4th year post-treatment			
	Diff.	*T*	*P*	df	Diff.	*T*	*P*	df
Contacts to psychiatric hospitals								
Completer vs. reference	0.05	2.2	**0.027**	554*	0.27	5.9	**0.000**	550*
No-show vs. reference	0.03	1.4	0.166	219*	0.10	2.5	**0.012**	218*
Completer vs. no-show	0.02	0.5	0.596	759**	0.17	2.8	**0.006**	685*
Bed days in psychiatric hospitals								
Completer vs. reference	− 0.10	− 0.3	0.792	15,763**	4.30	3.9	**0.000**	551*
No-show vs. reference	− 0.16	− 0.3	0.788	15,434**	0.31	0.4	0.665	15,434**
Completer vs. no-show	0.06	0.2	0.819	759**	3.99	3.4	**0.001**	696*
Psychologist via primary care								
Completer vs. reference	0.44	5.4	**0.000**	553*	0.97	7.1	**0.000**	551*
No-show vs. reference	0.40	3.2	**0.002**	216*	0.75	4.0	**0.000**	216*
Completer vs. no-show	− 0.51	− 0.6	0.540	82**	− 0.14	− 0.2	0.878	135**
Disp. vol. of psych. medication								
Completer vs. reference	35.82	5.2	**0.000**	563*	179.08	9.9	**0.000**	551*
No-show vs. reference	23.17	2.4	**0.016**	219*	125.84	5.6	**0.000**	217*
Completer vs. no-show	12.65	1.0	0.309	759**	53.24	1.9	0.064	503*
Contacts to somatic hospitals								
Completer vs. reference	0.19	2.9	**0.004**	573*	0.11	1.4	0.148	15,763**
No-show vs. reference	0.38	3.3	**0.001**	218*	0.43	3.0	**0.003**	219*
Completer vs. no-show	− 0.19	− 1.5	0.124	759**	− 0.32	− 2.0	0.051	337*
Bed days in somatic hospitals								
Completer vs. reference	0.08	0.3	0.738	15,764**	− 0.32	− 0.7	0.468	15,763**
No-show vs. reference	1.02	1.4	0.160	217*	0.92	1.3	0.191	15,434**
Completer vs. no-show	− 0.94	− 1.3	0.200	230*	− 1.24	− 1.7	0.095	283*
Primary care excl. psychologists								
Completer vs. reference	6.98	7.2	**0.000**	569*	9.95	7.0	**0.000**	568*
No-show vs. reference	7.05	4.9	**0.000**	220*	7.18	3.9	**0.000**	220*
Completer vs. no-show	− 0.07	0.0	0.967	759**	2.77	1.1	0.273	759**
Disp. vol. of somatic medication								
Completer vs. reference	11.38	1.3	0.196	15,763**	12.09	0.7	0.479	15,763**
No-show vs. reference	4.09	0.3	0.768	15,434**	23.64	0.9	0.389	15,434**
Completer vs. no-show	7.29	0.5	0.610	759**	− 11.55	− 0.3	0.755	759**

Utilization of four mental healthcare services and four somatic healthcare services the 4th year pre- and post-treatment. Mean difference, *t*-test and *P*-value, degrees of freedom (df). Significant *P*-values are in bold.
*Equal variance not assumed. Correction of df.
**Equal variance assumed. Not correction of df.

between the 4th year before intake and the 4th year after completed treatment showed a persistent, considerable and significant increase in utilization of healthcare services on all eight measured parameters. When compared with changes in the reference group, four out of eight parameters showed a significantly greater increase for completer patients. Thus, in the present study, psychotherapy does not entail a decrease in the utilization of healthcare services as proposed by the existing efficiency studies.

Methodological differences from previous studies

The increased usage of healthcare services after completed psychotherapeutic intervention is in contrast with results of previous studies (5, 6). One possible explanation may be the methodological differences in the definition and length of the observation period. Although both Mumford et al. (6) and Gabbard et al. (5) were aware that the recording of utilization of healthcare services for only a short period was an important limitation, the two reviews did not investigate the impact of this issue on the reviewed studies. Thus, it is likely that the large decreases found in these reviews are due to the fact that healthcare service utilization at intake was used as the baseline and only short follow-up periods were included. Our study suggests that the results of these previous studies may not be representative of changes in utilization of healthcare service over several years before and after intervention.

The second methodological issue was that the majority of studies only assessed inpatient days or otherwise relied on retrospective self-reports. Gabbard et al. (5) reported that inpatient days could be an insufficient parameter, as more treatments are now offered on an

Table 3. Results of *t*-tests within groups.

	4th pre Mean	*s*	4th post Mean	*s*	% change	ES	Difference	*t*	*p*
Contacts to psychiatric hospitals									
Completer	0.1	0.6	0.3	1.3	356.1%	0.46	0.27	4.4	**<0.001**
No-show	0.1	0.3	0.1	0.6	190.9%	0.33	0.10	2.2	**0.026**
Reference	0.0	0.2	0.0	0.4	111.9%	0.11	0.03	7.3	**<0.001**
Bed days in psychiatric hospitals									
Completer	0.4	3.4	5.1	25.6	1290.5%	1.39	4.71	4.3	**<0.001**
No-show	0.3	2.8	1.1	6.7	256.1%	0.28	0.78	1.6	0.113
Reference	0.6	16.0	0.8	11.5	44.6%	0.02	0.25	1.6	0.100
Psychologists via primary care									
Completer	0.5	1.9	1.2	3.2	119.5%	0.35	0.65	4.1	**<0.001**
No-show	0.5	1.9	1.0	2.8	92.7%	0.25	0.47	2.2	**0.026**
Reference	0.1	0.8	0.2	1.4	110.1%	0.14	0.12	9.9	**<0.001**
Disp. volume of psych. medication									
Completer	51.9	160.4	219.8	421.1	323.3%	1.05	167.89	9.2	**<0.001**
No-show	39.3	139.1	166.6	328.2	324.0%	0.92	127.30	6.0	**<0.001**
Reference	16.1	108.8	40.9	186.2	153.6%	0.23	24.75	19.1	**<0.001**
Contacts to somatic hospitals									
Completer	0.8	1.5	1.1	1.8	40.3%	0.21	0.31	3.1	**0.002**
No-show	1.0	1.7	1.4	2.1	45.5%	0.26	0.44	2.6	**0.011**
Reference	0.6	1.3	1.0	1.8	66.0%	0.31	0.39	23.6	**<0.001**
Bed days in somatic hospitals									
Completer	1.3	3.1	2.4	6.3	80.9%	0.34	1.08	3.5	**<0.001**
No-show	2.3	10.6	3.6	10.1	60.3%	0.13	1.37	1.4	0.170
Reference	1.3	5.3	2.8	13.6	123.3%	0.29	1.54	13.5	**<0.001**
Primary care excl. psych.									
Completer	22.6	22.5	33.3	33.1	47.6%	0.48	10.76	7.3	**<0.001**
No-show	22.7	21.0	30.5	27.2	34.7%	0.38	7.88	4.4	**<0.001**
Reference	15.6	18.4	23.4	26.8	49.9%	0.42	7.81	35.3	**<0.001**
Disp. volume of somatic medication									
Completer	60.1	183.1	124.3	303.5	106.7%	0.35	64.15	5.4	**<0.001**
No-show	52.9	163.1	148.4	893.7	180.8%	0.59	95.56	1.6	0.101
Reference	48.8	202.7	112.4	399.8	130.5%	0.31	63.63	24.4	**<0.001**

Average increase the 4th year pre–post-treatment for all eight healthcare parameters	%	ES
Completer	295.6%	0.58
No-show	148.1%	0.39
Reference	98.7%	0.23

Utilization of four mental healthcare services and four somatic healthcare services over the 4th year pre- and post-treatment. Mean change, percent change, effect size (ES), *t*-test and *P*-value within the patient groups and the reference group. Significant *P*-values are in bold.
s, standard deviation.

Table 4. Analysis of covariance (ANCOVA) and planned pairwise contrasts evaluating significant differences in change in utilization of healthcare service over the 4th year pre–post-treatment between patients groups and reference group.

	Overall contrast		Compl. Reference	No-show Reference	Compl. No-show
4th year pre–post-treatment dif.	*F*	*P*	*P*	*P*	*P*
Contacts to psychiatric hospitals	3.6	**0.026**	**0.008**	0.710	0.078
Bed days in psychiatric hospitals	0.1	0.901	0.657	0.911	0.884
Psychologist via primary care	14.5	**<0.001**	**0.035**	**<0.001**	**<0.001**
Disp. vol. of psych. medication	14.3	**<0.001**	**<0.001**	**0.002**	0.823
Contacts to somatic hospitals	1.4	0.252	0.633	0.109	0.269
Bed days in somatic hospitals	0.0	0.958	0.814	0.864	0.784
Primary care excl. psychologists	21.3	**<0.001**	**<0.001**	0.662	0.400
Disp. vol. of somatic medication	2.1	0.126	0.770	0.044	0.118

Significant *P*-values are in bold.

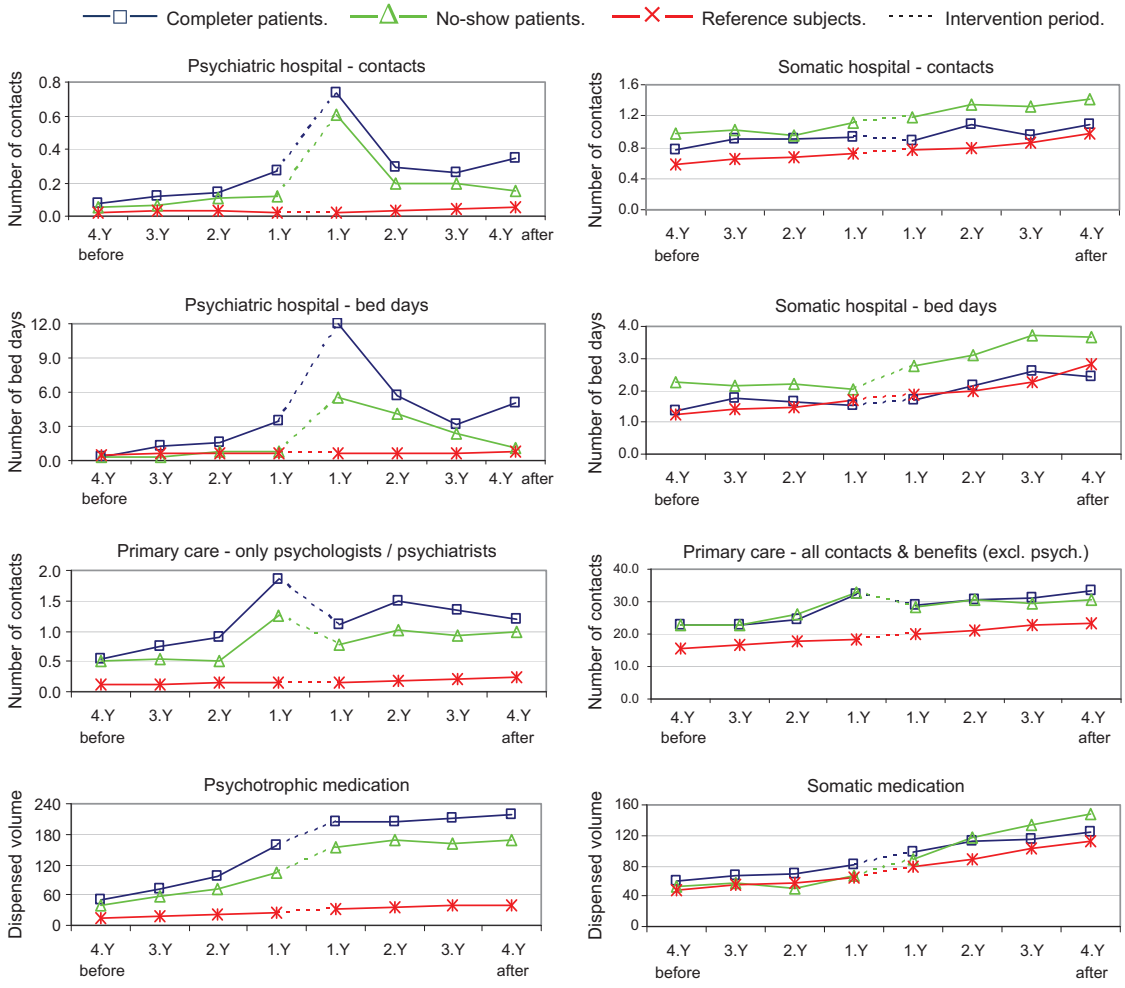

Fig. 1. Mean utilization of healthcare services by patient groups and the reference sample on four mental health parameters and four somatic healthcare parameters over eight years.

outpatient basis. Nevertheless, the majority of studies in the reviews by Gabbard et al. (5) and Mumford et al. (6) only reported inpatient days. Our results also suggest that inpatient days may be an insufficient measure. Thus, while the completer patients in the present study had fewer inpatient days in somatic hospitals the 4th year after intervention than the reference sample, they still had more total contacts with somatic hospitals. Validity may also be a problem for studies using self-reported data, as underreporting will happen when a high number of incidences or a long time span is included (18). Since our study included annual counts of up to 261 primary care contacts and up to 10,000 doses of dispensed medication per year, under-reporting would be likely if register data had not been used.

Potential explanations

In addition to the methodological issues, our results suggest consideration of three potential explanations for the increases in utilization of healthcare services.

MENTAL DISORDER MAY BE A LONG LASTING CONDITION

There is an ongoing debate concerning whether mental disorders should be characterized as a temporary state or a more permanent trait (23). With the fifth revision of the *Diagnostic and Statistical Manual* (DSM), proposals are made to conceptualize mental disorders as expressions of psychobiological dysfunction rather than temporary crises caused by external events (23). Studies investigating the natural course of common mental disorders find that the majority (up to 66%) of patients with mental disorders will have persistent symptoms many years after initial assessment, while the remaining patients will experience vanishing symptoms or full remission over time (11, 24). Our study may support the assumption that non-psychotic mental disorders are typically long lasting conditions, as our completer patients showed significantly higher utilization of healthcare services on five out of eight parameters at 4 years before intake as well as 4 years after treatment. Thus, some patients may due to their mental health need continuing support and

healthcare through many years (24), but the particular level of the patient's use of healthcare services may be influenced by the nature of the healthcare system, fees and socio-cultural factors (25, 26).

Another important point is that mental problems have a significant impact on the experience of somatic symptoms and consequently on utilization of somatic healthcare services (16, 17, 27); the reverse effect is probably also true (16). A large Norwegian population survey ($n = 50{,}377$) found that people with anxiety or depression had, on average, approximately six somatic symptoms, while mentally unaffected people had approximately three somatic symptoms; there was a linear relationship between the two categories of symptoms (16). Our results showed that all patients had significantly higher use of primary care services, and no-show patients had significantly more contacts with somatic hospitals than the reference group 4 years after completion of treatment.

Successfully completed psychotherapy may not bring recovery

Our results showed that completer patients on average achieved a large reduction in psychiatric symptoms (GSI score: ES = 0.99) and that 53% of the completer patients achieved a clinically reliable change during treatment and were within the functional range of a normal population—a higher percentage than observed for other treatment centers in similar settings (13). However, it was only with respect to somatic hospitals (contacts and bed days) and somatic medication 4 years after completion of treatment that completer patients were comparable with the reference group. On the remaining five mental and somatic healthcare parameters, completer patients showed significantly larger consumption compared with the reference group. In other words, completer patients were above the normal range in utilization of most categories of healthcare services after treatment, even though the mental symptoms of the majority of these patients were within the normal range of the general population. Consequently, it remains to be determined what kind of effect besides symptom reduction one should expect after successfully completed psychotherapy and which outcome measures one should use in evaluating psychotherapy. It has been suggested that assessment of quality of life and the ability to maintain an independent existence are more relevant for patients than assessment of symptoms (28, 29) and that the functional level of the patient correlates better with the utilization of healthcare services than severity of mental symptoms (30). Other recent studies suggest that compared with short-term therapies, long-term have better outcome with respect to symptoms and functionality and entail less need for auxiliary healthcare (31).

The healthcare system may stimulate patients to increased use of healthcare services

Our results showed that completer patients had a higher increase in consumption of mental healthcare services than patients who renounced treatment; in the 4th year pre–post comparison, completer patients increased usage of mental healthcare by 522% while no-show patients only increased usage by 216%. From a previous study, we know that about 40% of the patients at Stolpegaard Psychotherapy Centre had no prior experience with mental health treatment at the time of referral to Stolpegaard (10). Patients without a history of psychiatric treatment were approximately 1.5 times more likely not to show up to treatment compared with patients with prior mental healthcare experience. This finding may support the notion that the healthcare system in fact stimulates patients to be compliant and to use more mental healthcare services, since completer patients showed significantly more usage of all mental healthcare services 4 years after completion than no-show patients without therapy. On the other hand, no-show patients exhibited a higher use of somatic hospital services and medicine than completers, and patients in this group may tend to somatosize. However, even though a Danish study of 1785 consecutive patients in primary care found that 36% of these patients fulfilled the criteria for a somatoform disorder (27), somatoform diagnoses were very rare in our patient sample ($n = 6$, $< 1\%$). Somatoform disorder may be under-diagnosed and masked by somatic complaints (17). Studies have shown that when a patient and the physician/healthcare system disagree about the health problem or when a mental problem is treated by somatic healthcare services, excessive utilization of healthcare services may be the consequence (12).

Implications of the study

Assessed over a period of 4 years pre- and post-treatment, a substantial increase in utilization of healthcare services was observed for patients referred to and completed psychotherapy. Whether the increase would have been larger or smaller if the patients had not received psychotherapy is unknown. We propose three potential explanations: first, mental disorders may reflect a long-lasting psychobiological dysfunction requiring long-term use of healthcare services. Second, in the majority of patients, psychotherapy does not entail full recovery. Third, the healthcare system may stimulate increasing use of healthcare services in patients. All three factors may contribute to the results. Comparative studies of healthcare services in different countries have shown that there is not always a correlation between healthcare provision and utilization of healthcare services (26). Furthermore, there is not always a correlation between increased provision of healthcare services and improved health (25, 32). However, studies find significant correlations between

health and socio-economic status as well as psychosocial stressors (9, 17, 32). It has been suggested that more comprehensive social interventions than psychotherapy may be necessary (9). Studies are therefore needed to clarify how and why psychotherapeutic treatment does not necessarily lead to a reduction in the utilization of healthcare services for the average patient and to evaluate other potential interventions for patients with mental problems.

Limitations and strengths

Our study has some limitations regarding the design and the setting. Our design did not include a control group matched on diagnosis, and therefore no strong implications about the effect of treatment can be made. As in all naturalistic studies, our study has a risk for selection bias in the group of completer and no-show patients, where personal or socio-economic characteristics may have influenced the results. Furthermore, the study was conducted in a country and setting where most healthcare services are free of charge. This may result in a higher utilization of healthcare services compared with settings where access is controlled by insurance companies or the patient has to pay a fee for healthcare services (25, 26).

Our study has considerable strengths as well. First, we included a matched reference group to provide comparison to the general trend in utilization of healthcare services, and we included no-shows patients to see if their utilization was distinctively different. Second, our data on utilization of healthcare services were collected from highly reliably national registries. Third, our data consisted of a comprehensive set of different healthcare services observed for an extended observation period of 4 years before and after treatment. Overall, we think we have provided a sensitive and reliable measure of patients' utilization and changes in healthcare services before and after psychotherapeutic intervention.

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References

1. Bergin AE, Garfield S. Handbook of psychotherapy and behavior change. 4th edition. New York: John Wiley & Sons, Inc.; 2004.
2. Butler AC, Chapman JE, Forman EM, Beck AT. The empirical status of cognitive-behavioral therapy: A review of meta-analyses. Clin Psychol Rev 2006;26:17–31.
3. Konnopka A, Leichsenring F, Leibing E, Konig HH. Cost-of-illness studies and cost-effectiveness analyses in anxiety disorders: A systematic review. J Affect Disord 2009;114:14–31.
4. OECD. OECD Health Data 2012. OECD 2012 June 28 Available from: http://www.oecd.org/health/health-systems/oecdhealthdata.htm
5. Gabbard GO, Lazar SG, Hornberger J, Spiegel D. The economic impact of psychotherapy: A review. Am J Psychiatry 1997;154:147–55.
6. Mumford E, Schlesinger HJ, Glass GV, Patrick C, Cuerdon T. A new look at evidence about reduced cost of medical utilization following mental health treatment. Am J Psychiatry 1984;141:1145–58.
7. de Maat S, Philipszoon F, Schoevers R, Dekker J, De JF. Costs and benefits of long-term psychoanalytic therapy: Changes in health care use and work impairment. Harv Rev Psychiatry 2007;15:289–300.
8. Lazar A, Sandell R, Grant J. Do psychoanalytic treatments have positive effects on health and health care utilization? Further findings of the Stockholm Outcome of Psychotherapy and Psychoanalysis Project (STOPPP). Psychother Res 2006;16:51–66.
9. Self R, Oates P, Pinnock-Hamilton T, Leach C. The relationship between social deprivation and unilateral termination (attrition) from psychotherapy at various stages of the health care pathway. Psychol Psychother 2005;78 (Pt 1):95–111.
10. Fenger M, Mortensen EL, Poulsen S, Lau M. No-shows, drop-outs and completers in psychotherapeutic treatment: Demographic and clinical predictors in a large sample of non-psychotic patients. Nord J Psychiatry 2011;65:183–91.
11. van Weel-Baumgarten EM, Schers HJ, van den Bosch WJ, van den Hoogen HJ, Zitman FG. Long-term follow-up of depression among patients in the community and in family practice settings. A systematic review. J Fam Pract 2000; 49:1113–20.
12. Frostholm L, Ornbol E, Hansen HS, Olesen F, Weinman J, Fink P. Which is more important for outcome: The physician's or the patient's understanding of a health problem? A 2-year follow-up study in primary care. Gen Hosp Psychiatry 2010;32:1–8.
13. Johansson H. Do patients improve in general psychiatric outpatient care? Problem severity among patients and the effectiveness of a psychiatric outpatient unit. Nord J Psychiatry 2009;63:171–7.
14. Fisher PL, Durham RC. Recovery rates in generalized anxiety disorder following psychological therapy: An analysis of clinically significant change in the STAI-T across outcome studies since 1990. Psychol Med 1999;29:1425–34.
15. Mauskopf JA, Simon GE, Kalsekar A, Nimsch C, Dunayevich E, Cameron A. Nonresponse, partial response, and failure to achieve remission: Humanistic and cost burden in major depressive disorder. Depress Anxiety 2009;26:83–97.
16. Haug TT, Mykletun A, Dahl AA. The association between anxiety, depression, and somatic symptoms in a large population: The HUNT-II study. Psychosom Med 2004;66:845–51.
17. Haftgoli N, Favrat B, Verdon F, Vaucher P, Bischoff T, Burnand B, et al. Patients presenting with somatic complaints in general practice: Depression, anxiety and somatoform disorders are frequent and associated with psychosocial stressors. BMC Fam Pract 2010;11:67.
18. Short ME, Goetzel RZ, Pei X, Tabrizi MJ, Ozminkowski RJ, Gibson TB, et al. How accurate are self-reports? Analysis of self-reported health care utilization and absence when compared with administrative data. J Occup Environ Med 2009;51:786–96.
19. Jacobson NS, Truax P. Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. J Consult Clin Psychol 1991;59:12–9.
20. Derogatis LR. SCL-90-R. Symptom Checklist-90-R. Administration, scoring and procedures manual. 3rd edition. Minneapolis, MN: National Computer Systems; 1994.
21. Olsen LR, Mortensen EL, Bech P. Mental distress in the Danish general population. Acta Psychiatr Scand 2006;113:477–84.
22. Cohen J. Statistical power analysis for the behavioral sciences. Hillsdale, NJ: Lawrence Erlbaum Associates; 1988.
23. Stein DJ, Phillips KA, Bolton D, Fulford KW, Sadler JZ, Kendler KS. What is a mental/psychiatric disorder? From DSM-IV to DSM-V. Psychol Med 2010;40:1759–65.

24. Tyrer P, Seivewright H, Johnson T. The Nottingham Study of Neurotic Disorder: Predictors of 12-year outcome of dysthymic, panic and generalized anxiety disorder. Psychol Med 2004; 34:1385–94.
25. Baicker K, Taubman SL, Allen HL, Bernstein M, Gruber JH, Newhouse JP, et al. The Oregon Experiment: Effects of Medicaid on clinical outcomes. N Engl J Med 2013;368:1713–22.
26. Kovess-Masfety V, Alonso J, Brugha TS, Angermeyer MC, Haro JM, Sevilla-Dedieu C. Differences in lifetime use of services for mental health problems in six European countries. Psychiatr Serv 2007;58:213–20.
27. Toft T, Fink P, Oernboel E, Christensen K, Frostholm L, Olesen F. Mental disorders in primary care: Prevalence and co-morbidity among disorders. results from the functional illness in primary care (FIP) study. Psychol Med 2005;35:1175–84.
28. Mirin SM, Namerow MJ. Why study treatment outcome? Hosp Community Psychiatry 1991;42:1007–13.
29. Perkins R. What constitutes success? The relative priority of service users' and clinicians' views of mental health services. Br J Psychiatry 2001;179:9–10.
30. Fifer SK, Buesching DP, Henke CJ, Potter LP, Mathias SD, Schonfeld WH, et al. Functional status and somatization as predictors of medical offset in anxious and depressed patients. Value Health 2003;6:40–50.
31. Knekt P, Lindfors O, Sares-Jaske L, Virtala E, Harkanen T. Randomized trial on the effectiveness of long- and short-term psychotherapy on psychiatric symptoms and working ability during a 5-year follow-up. Nord J Psychiatry 2013;67:59–68.
32. Johannessen HA, Dieserud G, Claussen B, Zahl PH. Changes in mental health services and suicide mortality in Norway: An ecological study. BMC Health Serv Res 2011;11:68:68.

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