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ASSESSMENTS

A cost-utility analysis of psychoanalysis versus psychoanalytic psychotherapy

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Objectives: Despite the considerable and growing body of research about the clinical effectiveness of long-term psychoanalytic treatment, relatively little attention has been paid to economic evaluations, particularly with reference to the broader range of societal effects. In this cost-utility study, we examined the incremental cost-effectiveness ratio (ICER) of psychoanalysis versus psychoanalytic psychotherapy.

Methods: Incremental costs and effects were estimated by means of cross-sectional measurements in a cohort design (psychoanalysis, $n = 78$; psychoanalytic psychotherapy, $n = 104$). Quality-adjusted life-years (QALYs) were estimated for each treatment strategy using the SF-6D. Total costs were calculated from a societal perspective (treatment costs plus other societal costs) and discounted at 4 percent.

Results: Psychoanalysis was more costly than psychoanalytic psychotherapy, but also more effective from a health-related quality of life perspective. The ICER—that is, the extra costs to gain one additional QALY by delivering psychoanalysis instead of psychoanalytic psychotherapy—was estimated at €52,384 per QALY gained.

Conclusions: Our findings show that the cost-utility ratio of psychoanalysis relative to psychoanalytic psychotherapy is within an acceptable range. More research is needed to find out whether cost-utility ratios vary with different types of patients. We also encourage cost-utility analyses comparing psychoanalytic treatment to other forms of (long-term) treatment.

Keywords: Cost-utility, Psychoanalysis, Psychoanalytic psychotherapy, Long-term, Cost-effectiveness

Psychoanalysis is perceived as an expensive ambulatory treatment for mental illnesses. This high intensity treatment is still covered by national health insurance in Canada, Australia, and several European countries, including the

Netherlands. Economic considerations encourage policy makers and health insurance companies to only fund evidence-based treatments, which are of minimal burden to patients and that can be provided in the shortest possible period of time. In that light, psychoanalysis is on the brink of extinction if no evidence can be provided of its effectiveness in curing particular groups of patients. Perhaps shorter or less intensive treatments, such as psychoanalytic psychotherapy,

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are more cost-effective compared with psychoanalysis. Despite the considerable and growing body of research about the clinical effectiveness of long-term psychoanalytic treatment (e.g., Leichsenring and Rabung) (15), relatively little attention has been paid to economic evaluations, particularly with reference to the broader range of societal effects. Although state-of-the-art cost-effectiveness data are still scarce for long-term psychotherapy in the Netherlands, the first studies show promising results (e.g., Bartak et al. and van Asselt et al.) (3;22). In this light, a study into the cost-effectiveness of psychoanalysis might be particularly interesting because this is one of the most expensive ambulatory psychotherapeutic treatments with four to five sessions a week during an average of 4 to 5 years. Long-term psychoanalytic psychotherapy has a lower dosage with one to two sessions a week during an average of 2 to 3 years. A previous study showed that these two psychoanalytic treatments are commonly assigned to patients with serious, but roughly comparable, mental health problems, in particular chronic depression and personality problems (25). Because of the similarity of the mental health problems at the start of treatment, a comparison of the cost-effectiveness between the two long-term psychoanalytic treatments seems reasonable. The general aim of this study is to investigate how the costs and consequences of psychoanalysis relate to those of psychoanalytic psychotherapy.

Cost-utility analysis is generally recommended as the preferred economic evaluation method, especially when the health effects are measured in quality-adjusted life-years (QALYs; 10). The quality adjustment is based on a set of weights, called utilities, which reflects the desirability of the health states. A systematic review on cost-utility analysis studies of depression treatment showed that psychotherapy had lower costs per QALY than (primary physician) usual care (19). In addition, data on cost-effectiveness of psychotherapy for personality disorders suggest that treatment for patients with a high burden of disease may eventually lead to cost-savings (3). In cost-utility analyses, health improvement is commonly measured with instruments that describe and value health-related quality of life over a range of different health states. Such generic instruments can be used to assess the quality of life within a certain clinical setting and relate it to reported health states in other settings without having to gather that information in the project itself. Furthermore, state-of-the-art economic evaluations always include two different types of costs: (i) direct treatment costs and (ii) indirect costs associated with healthcare use and lost productivity related to health problems (21).

The objective of this study was to investigate the estimated cost-effectiveness of psychoanalysis delivered by mental health workers in ambulatory mental health clinics for patients with chronic depression and/or personality problems in comparison with a lower intensity psychoanalytic psychotherapy. Earlier reports have shown that both forms of psychoanalytic treatment were effective with re-

gard to reducing mental health symptoms and personality problems (4; Berghout, Zevalkink, & de Jong, unpublished data, 2009). In this cost-utility study, we examined the incremental cost-effectiveness ratio (ICER) of high-dosage versus lower-dosage psychoanalytic treatment which estimates the additional costs that need to be invested to achieve an extra QALY when choosing psychoanalysis over psychoanalytic psychotherapy.

METHOD

Participants

This multicenter study included 182 subjects from four mental healthcare organizations (Nederlands Psychoanalytisch Instituut, De Gelderse Roos, Mediant, Parnassia/Psy-Q) who received either psychoanalysis (PA; $n = 78$) or psychoanalytic psychotherapy (PP; $n = 104$). In this study, we used a quasi-experimental, cross-sectional design with three different cohorts (20). These cohorts were representative samples of patients from different phases of treatment. The subjects followed a naturalistic route through the clinical setting with treatment assignment performed in teams of experienced therapists who followed professional guidelines for government sponsored long-term ambulatory psychoanalytic treatment. The *pretreatment cohort* consisted of patients who just started long-term psychoanalytic treatment ($n_{PA} = 25$, $n_{PP} = 39$), the *posttreatment cohort* consisted of persons who had just finished long-term psychoanalytic treatment (approximately 3 months after treatment termination; $n_{PA} = 31$, $n_{PP} = 36$), and persons in the *follow-up cohort* had already finished their treatment 2 years ago ($n_{PA} = 22$, $n_{PP} = 29$). The PA/PP distribution did not significantly differ between cohorts.

The comparability of the patients in the cohorts was investigated in two ways. First, we examined pretreatment differences between cohorts with regard to sociodemographic characteristics (gender, age at intake, treatment history, cultural background, educational level, employment status, and living situation) and psychiatric diagnoses within each treatment group to identify potential confounds (5). For patients in the PA-group Chi-squared analyses and ANOVA revealed no significant differences between the three cohorts on pretreatment sociodemographic patient characteristics. In the PP-group, we found cohort differences regarding age at intake and living situation: subjects in the posttreatment cohort were somewhat younger at the start of treatment compared with subjects in the other two cohorts ($F = 3.39$; $p < .05$), and there were significantly fewer subjects in the posttreatment cohort who lived with a partner ($\chi^2 = 8.37$; $p < .05$).

Psychiatric diagnoses were assessed following the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-R) (2) of which three axes are relevant for research: Axis I (symptoms), Axis II (personality), and Axis IV (general functioning). For DSM-IV-R Axis I, no significant pretreatment differences between cohorts were found. Most frequently

diagnosed across all cohorts were mood disorders (44 percent), in particular dysthymic disorder (30 percent) followed by anxiety disorders (13 percent). The frequencies of Axis II diagnoses were roughly comparable across the cohorts, however, in the pretreatment PP-cohort there were significantly more patients with a diagnosis for a personality disorder ($\chi^2 = 9.44$; $p < .01$) compared to the other two cohorts. The majority of the patients (71 percent) was diagnosed with a personality disorder, in particular personality disorder not otherwise specified (29 percent), narcissistic personality disorder (13 percent), dependent personality disorder (12 percent), and avoidant personality disorder (12 percent). On Axis V, the average Global Assessment of Functioning (GAF) score was 64.0 ($SD = 7.9$). Pretreatment GAF scores of patients at follow-up were significantly higher compared with those of patients before and at end of treatment in both treatment groups (PA: $F = 3.77$, $p < .05$; PP: $F = 4.38$, $p < .05$). Maybe it has become customary to estimate the GAF score lower in light of the threat of budget cuts in recent years (see also Doidge et al.) (8).

Second, in a random subsample ($n = 58$), we investigated whether the cohorts had experienced similar processes with regard to treatment assignment over time and mental health clinic with the aid of three independent clinicians who retrospectively assessed the pretreatment GAF and treatment assignment (PP versus PA) from patient files in which all information regarding cohort status, mental health organization, pretreatment psychiatric classification, and treatment assignment was removed and edited in a similar format. No significant GAF differences were found. The results showed that clinical decision making did not change significantly over time (cohorts) nor differed across the four organizations (for details, see Berghout et al., unpublished data, 2009). This supports the hypothesis that a higher GAF in the follow-up might be a temporally influenced structural adjustment of the GAF score instead of a selection bias.

Treatments

Both psychoanalytic psychotherapy and psychoanalysis are open-ended long-term psychotherapeutic treatments, defined as consisting of at least 25 sessions or lasting at least 1 year. These psychoanalytic treatments have been described in textbooks (e.g., 10;11;18). In general, psychoanalytic treatments share some common theoretical assumptions and intend to influence the working of unconscious processes by either focusing on conflicts, object relations, the self, and/or interactional processes (11). Psychoanalysis differs from psychoanalytic psychotherapy in that patients in psychoanalysis receive three or more sessions per week lying on the couch, while patients in psychoanalytic psychotherapy sit face-to-face and the frequency typically is one or two times a week. The average length of treatment was 6.46 years for PA ($SD = 2.68$ yr) and 3.94 years for PP ($SD = 2.50$ yr). As could be expected, this difference in treatment duration was significant

($F = 29.0$; $p < .001$). All therapists ($n = 87$) in the project were licensed clinicians (psychiatrists/psychotherapists or psychologists/psychotherapists) and a member of one of the Netherlands psychoanalytic societies.

Procedure

Inclusion criteria for participation were a minimum age of 18 years, having mastery of the Dutch language, and having received or being assigned to long-term psychoanalytic treatment (>25 sessions, with a minimum frequency of once a week). Exclusion criteria were the presence of (acute) psychotic symptoms. All participants who met these criteria were approached by means of mail. When subjects returned a positive informed consent, they received a package of questionnaires by regular mail with a stamped return envelope. Data gathering was done in the period of January 2005 to June 2007. The set of questionnaires we used in the first months of the study did not include the SF-36. The number of patients with missing SF-36 data was highest in the pretreatment cohort, because we started relatively early with data collection in this cohort. DSM-IV-R diagnoses were assessed in a consensus meeting of psychiatrists, psychotherapists, and test-psychologists at the start of treatment after a comprehensive personality screening.

Instruments

Health-Related Quality of Life. The Short-Form Health Survey (SF-36) (24) is a generic self-report measure of health-related quality of life. The Dutch version of the SF-36 was used (1), which consists of thirty-six items and generates scores across eight dimensions of physical and mental health. In an extensive validation study, the mean coefficient alpha (internal consistency) of the SF-36 scales across scales and samples was found to be 0.84 (1). From a sample of eleven items of the SF-36, Brazier et al. (6) estimated a preference-based single index measure, resulting in the SF-6D index. The SF-6D index can be regarded as a continuous outcome scored on a 0.29 to 1.00 scale, with 1.00 indicating "full health." This index introduces preference weights into the scoring of descriptive data to generate health state utility values needed to construct QALYs and conduct cost-utility analyses (6). Missing values (22 percent) were replaced by using the group mean imputation method. QALYs were estimated by calculating the average utility scores (SF-6D index) between the pretreatment and posttreatment measurements as well as the average scores between the posttreatment and follow-up measurements and multiplying it by the time between these measurement points. We assumed that health status changes between two measurement points were gradual over time so that changes in utility scores could be approximated by a straight line (9). Sample sizes were not considered to be too discrepant to consider alternative statistical methods.

Direct Treatment Costs. The estimation of direct treatment costs involves two steps: the measurement of the quantities of resource use and the assignment of unit costs or prices (9). Total quantities of resource use could be calculated for patients who had finished their long-term psychoanalytic treatment. Three resource units were of importance here: the pretreatment diagnostic assessment, the number of realized sessions, and the number of cancelled sessions for which costs were already made. Data on quantities of resource use were obtained from administrative records kept by the mental healthcare organizations. At one of the research sites, there was no exact session administration before 2001, so for those patients whose treatments started before 2001, the number of sessions was calculated assuming an equal distribution of sessions over time (e.g., 138 sessions in 2001–2003 was extrapolated to 276 sessions for the period 1999–2003).

For the valuation of resource use, unit costs were based on data of actual personnel costs of all psychotherapists and psychiatrists who delivered psychoanalysis or psychoanalytic psychotherapy in 2006, including material and overhead costs. The average session costs were calculated at €115.22, and the costs associated with the whole pretreatment diagnostic assessment (intake sessions, personality assessment, clinical decision making) were calculated at €3,128. These unit costs were then multiplied by the quantities of resource use which resulted in an estimation of the total direct treatment costs. A discount rate of 4 percent was applied to account for differential timing of costs (17).

Other Societal Costs. In addition, direct medical costs and indirect costs were measured with the “Trimbos and iMTA questionnaire for Costs associated with Psychiatric illness” (TiC-P) (13). The TiC-P measures costs of relevant utilization of health care other than the psychoanalytic treatment and indirect costs due to production losses in paid work. We used the Health and Labor Questionnaire (HLQ) approach

to estimate costs associated with productivity loss at work (12). With this approach, respondents are asked to estimate the number of additional hours they should have worked to compensate for production losses due to illness and reduced efficiency on working days. For the analysis of long-term absence from work, we applied the friction-cost method (17). This limits the indirect costs of productivity losses to the period it takes to replace someone who becomes disabled. This friction period is estimated at 154 days (12). Missing values (4 percent) were replaced by using the group mean imputation method. The total societal costs were estimated by calculating the averages between the pretreatment and posttreatment measurements as well as the averages between the posttreatment and follow-up measurements and multiplying it by the time between these measurement points. We assumed that changes in societal costs between two measurement points were gradual over time. A discount rate of 4 percent was applied to account for differential timing of costs (17).

Sensitivity Analyses

The usual approach to handling uncertainty in economic evaluations is to conduct sensitivity analyses (9). Robustness of the results was assessed by using three-way sensitivity analyses. We recalculated ICERs by varying discount rates of treatment costs and other societal costs between 0 percent and 8 percent, by using the lower confidence limit or the upper confidence limit (95 percent confidence interval) of the incremental effects in QALYs, and by using mean imputation or no imputation to deal with missing data.

RESULTS

Pretreatment Assessment

For each treatment group, baseline sociodemographic and diagnostic characteristics of the patients are presented in Table 1. Chi-squared analyses and ANOVA revealed no

Table 1. Baseline Characteristics of Study Participants in Psychoanalysis (PA) and Psychoanalytic Psychotherapy (PP)

	PA (n = 78)	PP (n = 104)	
Age, yr: M (SD)	33.2 (7.9)	31.6 (7.9)	
Gender			
Female	62%	80%	**
Received previous treatment	79%	72%	
Education			
Middle	21%	24%	
Higher	79%	76%	
Western cultural background	90%	91%	
Living with partner	48%	44%	
Living with children	22%	18%	
Employed	84%	73%	
DSM-IV-R diagnoses			
Diagnosed with Axis-I disorder	99%	100%	
Diagnosed with Axis-II disorder	72%	69%	
Global Assessment of Functioning: M (SD)	65.0 (7.3)	63.3 (8.3)	

**p < .01.

Table 2. SF-6D Means and Standard Deviations for a 2 × 3 ANOVA

Treatment group	Phase of treatment					
	Pretreatment		Posttreatment		Follow-up	
	M	SD	M	SD	M	SD
Psychoanalysis (PA)	0.704	(0.05)	0.793	(0.09)	0.757	(0.09)
Psychoanalytic psychotherapy (PP)	0.713	(0.07)	0.767	(0.10)	0.776	(0.09)

	Between-subjects effects			
	df	F	η^2	p
Phase of treatment	2	12.17***	0.12	.000
Treatment group	1	0.00	0.00	.955
Phase of treatment × Treatment group	2	1.20	0.01	.305
Within group error	176	(0.01)		

Note. Value enclosed in parentheses represents mean square error. PA: $n_{\text{pretreatment}} = 25$, $n_{\text{posttreatment}} = 31$, $n_{\text{follow-up}} = 22$; PP: $n_{\text{pretreatment}} = 39$, $n_{\text{posttreatment}} = 36$, $n_{\text{follow-up}} = 29$.
 *** $p < .001$.
 ANOVA, analysis of variance.

significant differences between patients in PA and patients in PP on pretreatment sociodemographic or diagnostic characteristics, except for the distribution of gender. There were significantly more women in the PP-group than in the PA-group (80 percent versus 62 percent; $\chi^2 = 7.38$; $p < .01$). Before the start of treatment, patients in PA did not differ significantly from patients in PP with regard to the SF-6D utility score and direct and indirect healthcare utilization.

Incremental Cost-Effectiveness Ratio

Table 2 presents the mean SF-6D utility scores for each cohort. A 2 (treatment group) × 3 (phase of treatment) independent groups analysis of variance was performed to examine main and interaction effects between treatment groups and phase of treatment. We found a significant main effect for phase of treatment, which means that there were significant differences between the cohorts on the SF-6D index. These differences were in the expected direction, that is, better health status after treatment compared with before treat-

ment. We did not find a main effect for treatment group nor an interaction effect.

Table 3 presents the average treatment costs and other societal costs as well as the total costs of PA and PP. The total treatment costs for PA and PP were calculated by multiplying the average number of sessions by the basic session cost and adding the costs associated with the whole pretreatment diagnostic assessment (intake sessions, personality assessment, clinical decision making). The average number of sessions (including cancelled sessions) in PA was 971, and the average number of sessions for PP was 180. As expected, psychoanalysis was more expensive than psychoanalytic psychotherapy. Next, we calculated the number of QALYs achieved. Table 3 shows that more QALYs were achieved after PA as compared with PP (6.4 versus 4.5, respectively), but that the average costs per QALY was also higher. The ICER was estimated by dividing the difference in overall costs by the difference in QALYs between PA and PP. Table 3 shows that the extra costs to gain one additional QALY by delivering psychoanalysis instead of psychoanalytic psychotherapy was €52,384.

Table 3. Total Costs, QALYs, and Average Costs per QALY for Psychoanalysis (PA) and Psychoanalytic Psychotherapy (PP) and ICER

	PA	PP	Incremental values
Treatment costs (€)	103,507	22,576	
Other societal costs (€)	35,593	15,580	
Total overall costs (treatment + societal; €)	139,100	38,156	100,944
QALYs	6.384	4.457	1.927
Average costs per QALY (€ /QALY)	21,789	8,561	
ICER			52,384

Note. $N_{PA} = 78$, $N_{PP} = 104$.
 QALYs, quality-adjusted life-years; ICER, incremental cost-effectiveness ratio.

Table 4. ICER Estimations Based on Three-Way Sensitivity Analyses

Discount rate	Δ QALYs	Dealing with missing data	ICER estimation
0%	Lower confidence limit	Mean imputation	€61,854/QALY
0%	Upper confidence limit	Mean imputation	€57,518/QALY
0%	Lower confidence limit	No imputation	€64,098/QALY
0%	Upper confidence limit	No imputation	€55,678/QALY
8%	Lower confidence limit	Mean imputation	€48,217/QALY
8%	Upper confidence limit	Mean imputation	€44,837/QALY
8%	Lower confidence limit	No imputation	€49,967/QALY
8%	Upper confidence limit	No imputation	€43,403/QALY

ICER, incremental cost-effectiveness ratio; QALYs, quality-adjusted life-years.

Sensitivity Analyses

The lower bound estimation of incremental QALYs was estimated at 1.857, and the upper bound estimation of incremental QALYs was estimated at 1.997. Incremental costs at a discount rate of 0 percent were estimated at €114,864, and incremental costs at a discount rate of 8 percent were estimated at €89,540. Table 4 shows the recalculated ICERs across varying discount rates and varying estimations of QALY differences. We found a small to moderate degree of variation in ICER estimations, supporting the robustness of the results.

DISCUSSION

In this study, we presented a cost-utility analysis to address the relative effectiveness and costs of two forms of long-term ambulatory psychoanalytic treatment using a cross-sectional cohort design. We combined pretreatment, posttreatment, and follow-up estimates of health-related quality of life and costs to provide incremental cost-effectiveness ratios and the average cost per QALY. The results showed that psychoanalysis was more expensive than psychoanalytic psychotherapy, but also more effective in terms of QALYs gained. The ICER of psychoanalysis compared with psychoanalytic psychotherapy showed that the cost of one QALY gained was just over €52,000. Whether or not psychoanalysis provides good value for money compared with psychoanalytic psychotherapy depends on the threshold of the ICER as is acceptable in the society at hand. From the literature, it becomes clear that estimates of this threshold vary from €12,000 to €73,000 per extra QALY in the Netherlands (7). The literature also reveals that estimates of acceptable threshold values tend to increase in patient populations with life-threatening diseases and higher burden of disease. Our results suggest that the cost-utility ratio of psychoanalysis relative to psychoanalytic psychotherapy appears to be within the acceptable range when lenient threshold values are applied, but it becomes less cost-effective when stricter threshold values are used. The results should be interpreted with caution due to the design, which brings biases from both sampling and timing differences.

We used state-of-the-art instruments to assess health-related quality of life and direct and indirect societal costs. With the SF-6D, it is possible to examine whether a treatment has a clinically relevant effect on health-related quality of life, as the minimally important difference (MID) for the SF-6D utility scores has been estimated to be 0.033 points (23). Utility scores for patients receiving psychoanalysis increased with 0.089 from pretreatment to posttreatment. For patients in psychoanalytic psychotherapy, the increase in utility scores from pretreatment to posttreatment was 0.054. From this, we can conclude that both treatments had a clinically relevant effect on health-related quality of life as it exceeds 0.033. The SF-36 is a generic measure and not so much targets the specific areas in which our patients experience problems. In this way, it is possible to compare patient populations. Although not relevant for cost-utility analysis, we tentatively examined the SF-36 subscales. It appeared that our patient population showed significantly worse health-related quality of life scores in several areas (mainly mental problems) before treatment as compared to the age- and sex-adjusted reference scores from the Dutch general population (1). However, our patients did not report many physical problems and were actually functioning quite well in these areas at the start of treatment. With the TiC-P, we generated data on direct medical costs following a standard procedure. It included costs associated with productivity loss at work, which was particularly relevant to our study population. As advised by the developers of the instrument, we decided not to consider costs of medication use, because of the immense diversity in medications used and relatively low costs associated with it. By including the TiC-P, we tried to adopt a broad societal perspective. Nonetheless, we are aware that we are still dealing with imperfect estimates of true overall costs for society. As Lazar et al. (14) pointed out, remote savings such as reduced healthcare consumption and increased productivity of the patient's family members, should ideally be included, but are obviously difficult to measure.

Even in the most carefully designed study, data for all patients are unlikely to be complete. Group mean imputation generates 'replacement' values for missing data that will permit complete case analysis using the whole data set. While mean imputation is one of the most commonly used

methods to deal with missing data in economic evaluations, Oostenbrink and Al (16) state that one should be cautious to apply relatively simple methods such as mean imputation to deal with missing data, because it can often lead to biased estimates. We had to deal with a fairly large amount of missing SF-6D data, so these estimations were associated with the most uncertainty. The sensitivity analyses revealed, however, that this uncertainty impacted the estimations of the cost-effectiveness ratios only to a moderate extent.

In cross-sectional cohort designs, a potential form of confounding involves differences in background characteristics and level of pretreatment psychopathology between the cohorts. One cannot be sure that the patients enrolled in the various cohorts were entirely equivalent in terms of baseline psychopathology and background characteristics. Pretreatment differences could potentially influence the results of our cohort comparisons. To investigate bias, we compared the three cohorts on pretreatment DSM-IV-R diagnoses, sociodemographic characteristics and clinical decision making and found very few significant differences. Although we realize that there might be other variables—which we did not measure—that could have relevance to potential confounds, we have checked the comparability of the cohorts on several variables and found no significant sampling bias. The present cross-sectional cohort design was set up to gather data about costs and effects of long-term treatments within a relatively short period of time. We encourage future studies on the cost-utility of long-term psychoanalytic treatment to also include true longitudinal research designs. In addition, we encourage cost-utility analyses of psychoanalytic treatment compared with other forms of (long-term) treatment. Our study has shown that psychoanalysis is indeed more costly compared with psychoanalytic psychotherapy, but also more effective from a health-related quality of life perspective. The cost-utility ratio of psychoanalysis relative to psychoanalytic psychotherapy appeared to be within the acceptable range, however, when one uses stricter thresholds psychoanalysis becomes less cost-effective than psychoanalytic psychotherapy. More research is needed to find out which types of patients have benefited more from psychoanalysis as compared to psychoanalytic psychotherapy.

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