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ORGINAL PAPER

Relational Diagnosis and Psychotherapy Treatment Cost Effectiveness

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Abstract Despite a call by researchers for estimates of the treatment effectiveness and cost effectiveness for relational problems, very little has been done to answer this call. The present study is an examination of actual treatment costs and recidivism rates for patients treated for a relational problem (either in individual or conjoint therapy sessions) in the Cigna network. Policymakers and third-party payers may use such clinical-effectiveness and cost effectiveness data to make decisions regarding treatment of relational problems and funding allocation. The present study is also the first to compare the costs of couples therapy versus family therapy for relational problems.

Keywords V-code · Relational diagnosis · Cost effectiveness · Couples therapy

Introduction

Research has firmly established the impact of family relationships on individual mental health (e.g. Kiecolt-Glaser and Newton 2001; Ross et al. 1990). As such, individual and family therapy clients often present in therapy with relational problems—those that occur typically between two or more members of a family or between intimate partners (American Psychiatric Association 2000). Although family relationship problems have been shown to be related to individual mental health, little is known about the cost effectiveness of treating diagnosed family relationship problems. In fact, the call of Pinsof and Wynne (1995a) for researchers to incorporate cost effectiveness measures into their

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studies has gone largely unanswered due to a lack of available data regarding the costs of couple and family therapy.

Policymakers and third-party payers could use cost effectiveness data to make decisions regarding treatment of relational problems and funding allocation. From a clinical perspective, an understanding of which treatment provider type or therapy modality (e.g. family or individual treatment) is most cost effective may provide insight into what works in the treatment of relational problems. The present study used administrative data from a large health insurer in the United States to study the under examined area of the cost effectiveness of treating relational problems.

Review of Literature

DSM-IV-TR Relational Diagnosis

The data for the present study uses the DSM-IV-TR relational diagnoses as an indicator of relational distress. Although the 4th edition text revision of the DSM does not include a set of specific diagnostic categories for relationship problems, "V-codes" can be used to indicate that a relational problem is the focus of treatment. Although not all V-codes are specifically relational in nature, several are. These include V61.20 (Parent–Child Relational Problem), V61.10 (Partner Relational Problem), V61.80 (Sibling Relational Problem), V61.90 (Relational Problem Related to a Mental Disorder or General Medical Condition), and V62.81 (Relational Problem Not Otherwise Specified). Very little research has focused on treatment cost effectiveness for V-code relational problems. This may be due, in part, to the relative difficulty of accessing a sufficiently large sample, including treatment cost data, of individuals treated for relational problems.

Treatment Cost Effectiveness

It has been argued that the ultimate goal in health care is "to provide the most positive benefit for the least cost to the most people" (Fals-Stewart et al. 2005, p. 29). However, the most common complaint about psychotherapy (especially family therapy) research on cost effectiveness is that there is very little of it (Pinsof and Wynne 1995a). Average costs for the treatment of relational problems have been presented (Crane and Payne 2011), but many questions about the cost effectiveness for these treatments remain.

The study that most closely answers these relational treatment cost effectiveness questions is one by Caldwell et al. (2007). Using data from empirical studies on behavioral marital therapy and emotionally focused therapy, the authors created hypothetical cost evaluations of marital therapy versus divorce and medical service usage. Results indicate that marital therapy, paid by the government or insurance providers, is less costly than divorce and health-service-usage expenses incurred by those who may not receive marital therapy.

Of the few studies that have examined costs of treatment of relationship-based problems, several limitations exist. First, no studies have specifically targeted DSM-IV-TR V-codes. Second, although Crane and Payne (2011) examined the effectiveness and cost effectiveness differences among treatment provider types and treatment modalities in managed care for various diagnosis categories, no studies have examined these variables specifically in the treatment of relational problems. Third, no studies have separated out the treatment costs for family versus couple therapy. Clearly, the area of treatment cost

effectiveness for relational problems is woefully understudied. Knowing more about treatment costs for relational problems is valuable because of the rising costs of health care in the United States (Mongan et al. 2008). Identifying predictors of a cost-effective treatment of these types of problems could result in cost savings for care providers.

Calculating cost effectiveness can be complicated. Cost effectiveness generally involves two components: a treatment cost measure and a treatment impact or effectiveness measure (Pinsof and Wynne 1995a). A cost effectiveness formula compares both the cost of a given treatment option and the related outcome at the same time—providing a common measure for group comparison. In the case of the present study, this common measure would be cost per successful unit of treatment. A cost-effective treatment is not necessarily the least expensive, but the one that provides the most value for the money (Wells and Sturm 1995).

Some have suggested that the cost component of a cost effectiveness analysis should include such costs as lost time at work for clients, therapist overhead costs, per-session payments, and transportation costs (Pinsof and Wynne 1995b). However, including these data may limit the ability of researchers to compare cost information across studies since not every researcher will have access to the same cost data. The most readily available cost information is simply the per-session fee paid to the therapy provider, either by the client or by a third-party payer. Although this measure of cost does not include all potentially relevant treatment-related costs, it does provide a more comparable measure of cost across studies.

Nearly every cost effectiveness formula follows the same pattern: calculating units of improvement per treatment dollar (e.g. Goldfield et al. 2001; Holder et al. 1991). Since cost effectiveness studies regarding couple and family therapy are rare, the present study answers the call of Pinsof and Wynne (1995a) to address this understudied area.

Methods

Sample

This study examined administrative data from Cigna. When the data was examined, Cigna managed several hundred health care plans with millions of patients. The data used in the present study was from 2001 through 2006. Data available for each patient included age and gender, the region of the country where treatment took place, a current procedural terminology (CPT) code indicating family or individual treatment, primary and secondary DSM-IV-TR diagnoses, the treatment provider's license type, dollar amount of each claim and number of therapy sessions (claims) per patient.

The sample included 3,315 patients who received treatment for a relational diagnosis V-code and who did not drop out of treatment after the first therapy session (Hamilton et al. 2011). Family and couple therapy are differentiated on the basis of the relational diagnosis in the claim. Those with a diagnosis of a partner relational problem (V61.10) and a relational CPT code ($n = 902$) are assumed to be using a couple-therapy modality. Those with a parent–child relational problem (V61.20) and a relational CPT code ($n = 415$) are assumed to be using family therapy. The ages of patients in the data set range from 1 to 96 ($M = 34.32$, $SD = 13.34$). Of the patients in the data, 53.8 % ($n = 1{,}782$) were female and 46.2 % ($n = 1{,}533$) were male. The Health Insurance Portability and Accountability Act of 1996 (HIPAA) allows the use of administrative data for studies such as these. No individual patient or provider was identifiable from the data.

Data Cleaning

Raw claims data were combined on a per-patient basis so that each patient represented one line in the data. Because the present study focuses on relational problems, a subset of the Cigna data was selected in which only patients with relational problems were included. For a full overview of all data cleaning steps for the entire Cigna data, see Crane and Payne's study (2011).

Procedure

Treatment providers with nationally recognized licenses were considered for this study. Profession types examined were psychologists, licensed counselors, social workers, and marriage and family therapists. MDs and nurses were included in the data in such small numbers that the decision was made to eliminate them from analysis. The final data set consisted of 3,315 patients and 18,404 therapy sessions.

Episodes of Care

Episodes of Care (EoC) were defined by Cigna as a series of services for the same patient. An EoC ended after an individual had no psychotherapy claims for 90 days. The number of sessions in the first EoC per patient in the data set ranged from 2 to 105 ($M = 5.55$, $SD = 5.53$), and more than 91 % of all patients completed therapy in a single EoC. Therefore, the first EoC is the primary focus of this study.

Total Cost

In the present study, the total "cost" of a given treatment is defined as the number of treatment sessions used by a patient multiplied by the amount paid to the treatment provider per session.

Recidivism and Treatment Success

In the present study, a recidivist is defined as a patient who returns for a second EoC after completing one EoC (see Crane and Payne 2011). Those patients who had only one EoC during the 6-year period examined are considered a successfully treated case.

Cost Effectiveness

A cost effectiveness formula was created. Cost effectiveness consists of per-session cost of treatment and the number of units required for successful treatment. Successful treatment outcomes can be compared for multiple groups, such as therapy provider types. Cost effectiveness was calculated as the 1st EoC average cost + (1st EoC average cost * recidivism rate) (Crane and Payne 2011). This formula incorporates average cost of treatment for a group (e.g. treatment provider type) and estimates additional cost based on that group's recidivism rate in the data—the measure of treatment effectiveness.

Dropouts

In the full Cigna data set (including patients with all diagnoses, not just relational), 18 % ($n = 85{,}065$) of patients had only one therapy session in the first EoC. These patients are considered therapy dropouts (Hamilton et al. 2011) and were therefore eliminated from cost effectiveness examinations. If left in, they could artificially lower overall costs for any group in consideration that has higher dropout rates.

Services and Diagnoses

Psychotherapy claims were identified using Current Procedural Terminology (CPT) codes as either individual psychotherapy therapy (90806) or conjoint/family psychotherapy (90847) (American Medical Association 2006).

Modality

Those patients who were classified as receiving individual (n = 1,360) or conjoint (couple or family) therapy (n = 1,317) were those whose claims in either EoC were exclusively of one type or the other. Those patients who received a combination of individual and conjoint sessions were classified as receiving a "mixed" therapy type (n = 638).

Profession Type

There were four types of therapy providers in the Cigna data who treated relational problems including: professional counselors, social workers, marriage and family therapists, and psychologists. MDs and nurses had data as treatment providers. However, they provided therapy for so few cases with a relational diagnosis (only 16 and 22 respectively) that they were eliminated from consideration in further analysis.

Control Variables

Several variables in the data have been shown to affect therapy costs (Crane and Payne 2011). These include the region where service was provided, profession of therapy provider, therapy modality, patient gender, and patient age. In order to determine which variables should be used as controls in regressions predicting costs and recidivism in the present study, these variables were tested to determine their effect on the dependent cost or recidivism variables. Results of these preliminary analyses are presented in the preliminary analysis section below.

Relational Diagnoses

The relational diagnoses (V-codes) were represented as primary diagnoses in the data for the following numbers of patients: Partner Relational Problem (V61.10; $n = 2{,}355$), Parent–Child Relational Problem (V61.20; $n = 960$), Sibling Relational Problem (V61.80; $n = 47$), and Relational Problem Related to a Mental Disorder or General Medical Condition (V61.90; $n = 42$). In the Cigna data, the most common relational diagnoses are partner relational problem and parent child problem. Because these two V-codes were, by far, the most prevalent, they were the primary focus of the study.

Partner-relational problems and parent–child problems seemed to be categorically different so as to necessitate breaking these down into two separate groups rather than combining them into a broad "relational diagnosis" category (American Psychiatric Association 2000).

In this way, cost effectiveness differences between couple and family therapy could be examined. Since it is reasonable to infer a couples therapy modality from the type of relational code given in addition to the CPT code, the present study is the first study that examines the costs of couples therapy in a managed-care setting.

Finally, while many treatments for relational problems occur in a relational context as indicated by the 90847 CPT code (n = 1,317), about as many treatments of relational problems occur with only a single individual in the therapy sessions (n = 1,360). Therefore, cost, recidivism, and cost effectiveness were examined for relational problems treated in a relational therapy context versus relational problems treated with individual therapy. This provides valuable insight into the question of whether all relevant family members need to be present in therapy for the couple or family to receive the full benefits from treatment of relational problems.

Preliminary Analysis

In order to determine which variables should act as controls in subsequent analyses, a preliminary analysis was conducted. The two outcome variables that were examined in regressions in this study were recidivism and treatment cost for EoC1. To determine controls for analyses using logistic regression, a logistic regression was run, predicting recidivism, the treatment outcome variable of this study. Variables that have been demonstrated to impact the recidivism outcome variable were placed into the model (Crane and Payne 2011). These included patient gender and age as well as therapy provider profession type, therapy modality, and region of the country where services were provided. The model was significant, $\chi^2(5,\ N = 3{,}315) = 14.69,\ p < 0.05$. Significant predictors of recidivism were patient gender ($p < 0.01$), and therapy modality ($p < 0.05$), which were used in later analysis as control variables when predicting recidivism.

To determine controls for analyses using ordinary least squares regression, predicting the total cost per patient for EoC1, a regression was run using the same variables. The model was significant, $F(5, 3{,}309) = 32.06$, $p < 0.001$. Significant predictors in the model included patient age ($p < 0.001$), region ($p < 0.05$), profession type ($p < 0.001$), and modality ($p < 0.001$). Gender was not a significant predictor in the model. Therefore, where appropriate, patient age, therapy modality, provider profession type, and region where services were provided were used as statistical controls in regressions predicting cost.

Research Questions

The purpose of this study was to determine the cost effectiveness of treating relational problems in managed care. Consequently, the following research questions were addressed:

Question 1 Which of the therapy treatment modalities, individual, family (or relational), or mixed has the greatest success (defined by patient recidivism) in treating relational problems?

Question 2 What is the cost effectiveness for each of the professions treating patients with relational problems?
Question 3 What is the cost effectiveness of treating patients with relational problems for each of the treatment modalities in the data, individual, family, and mixed?
Question 4 What are the cost differences in treating couple versus family problems with relational therapy?

Results

Question 1

Which of the therapy treatment modalities, individual, family, or mixed has the greatest success (defined by patient recidivism) in treating relational problems? The two types of relational problems, parent–child (n = 960) and partner-relational (n = 2,355), were examined separately. In order to answer this question, three separate binary logistic regressions were run for each group, using one of the three modalities as the reference variable for group comparisons, and controlling for patient gender.

For parent–child problems, the model was not significant $\chi^2 = 5.18$, $p = 0.16$. For partner-relational problems, the model was also not significant $\chi^2 = 6.67$, $p = 0.08$. Therefore, none of the modalities was more or less likely to have recidivism than the others for the treatment of either type of relational problem.

Question 2

What is the cost effectiveness for each of the professions treating patients with relational problems? Cost effectiveness in this case has two components—average cost per profession and average recidivism per profession. Statistical differences among average costs by profession were examined with an ordinary least squares regression, controlling for patient age and region where services were provided. Four groups were examined including (a) patients treated for parent–child problems with a relational modality (n = 415), (b) patients treated for parent–child problems with an individual modality (n = 359), (c) patients treated for partner-relational problems with a relational modality (n = 902), and (d) patients treated for partner-relational problems with an individual modality (n = 1,001).

For each group, four different regressions were run, each with a different profession as the reference group. For those treated for parent–child problems with a relational modality, the model was significant, F (5, 409) = 4.08, $p < 0.001$. Psychologists had significantly higher average costs than counselors, MSWs and MFTs. No other differences were statistically significant. For those treated for parent–child problems with an individual modality, the model was significant, F (5, 353) = 3.69, $p = 0.003$. On cost, counselors were significantly higher than MFTs ($p = 0.04$) and lower than psychologists ($p = 0.03$). Also lower than psychologists were MSWs ($p = 0.004$) and MFTs ($p < 0.001$).

For those treated for a partner-relational problem with a relational modality, the model was significant, F (5, 896) = 11.19, $p < 0.001$. Only counselors were significantly different on cost than other providers. They were lower than MSWs ($p < 0.001$), MFTs ($p < 0.001$), and psychologists ($p = 0.02$). Finally, for those treated for a partner-relational problem with an individual modality, the model was significant, F (5, 995) = 5.39,

$p < 0.001$. On costs, psychologists were significantly higher than counselors ($p < 0.001$), MSWs ($p < 0.001$), and MFTs ($p = 0.03$).

Tables 1 and 2 depict the cost of an average treatment by each profession, treating each of the four groups. In these tables, statistical and cost differences are computed from the previously described OLS regression analysis of average costs differences among professions.

For cost effectiveness calculations, the average total dollars in EoC1 were entered into the cost effectiveness formula presented earlier. Because the cost effectiveness formula includes a measure of recidivism for each profession being examined, differences in recidivism by profession were examined with a binary logistic regression, controlling for patient gender, for each patient group examined. For patients treated for parent–child problems with a relational modality, the model was not significant, $\chi^2 = 1.37$, $p = 0.85$. For patients treated for parent–child problems with an individual modality, the model was not significant, $\chi^2 = 4.99$, $p = 0.29$. For patients treated for partner-relational problems with a relational modality, the model was significant, $\chi^2 = 17.08$, $p = 0.002$. On recidivism, MFTs were significantly different than counselors ($p < 0.05$), MSWs ($p < 0.05$), and psychologists ($p < 0.05$). No other significant differences among the provider types were found. In this case, counselors were more than 8 times as likely to see recidivism than MFTs while MSWs and psychologists were more than 12 and 9 times as likely, respectively, than MFTs to see patients return for a second episode of care. Finally, for patients treated for partner-relational problems with an individual modality, the model was not significant, $\chi^2 = 1.69$, $p = 0.79$. Thus, in all but one case, the recidivism rates were not significantly different among the professions.

For use in the cost effectiveness formula, mean recidivism rates by profession were determined for each of the four groups. For patients treated for parent–child problems with a relational modality, the profession with the lowest recidivism rate was counselors with a rate of 9.38 %, followed by psychologists (12.7 %), MSWs (12.9 %), and then MFTs (14.29 %). For patients treated for parent–child problems with an individual modality, the profession with the lowest recidivism rate was MSWs (8.33 %), followed by counselors (9.1 %), MFTs (11.32 %), and then psychologists (12.7 %). For patients treated for partner-relational problems with a relational modality, the profession with the lowest recidivism rate was MFTs (1.0 %), followed by counselors (7.72 %), psychologists (8.99 %), and then MSWs (11.01 %). Finally, for patients treated for partner-relational problems with an individual modality, the profession with the lowest recidivism rate was MFTs with 5.94 %, followed by MSWs (6.7 %), psychologists (7.04 %), followed by counselors (8.36 %). Cost effectiveness was then calculated with the formula provided earlier, using group means for total dollars in EoC1 and recidivism in EoC1.

For patients treated for parent–child problems with a relational modality, the most cost effective profession was counselors (n = 99; $217.85), followed by MFTs (n = 70; $253.10), MSWs (n = 186; $260.20), and psychologists (n = 63; $387.53). For patients treated for parent–child problems with an individual modality, the most cost effective profession was MFTs (n = 53; $180.34), followed by MSWs (n = 144; $219.53), counselors (n = 99; $228.90), and psychologists (n = 63; $316.57) . For patients treated for partner-relational problems with a relational modality, the most cost effective profession was counselors (n = 285; $209.71), followed by psychologists (n = 178; $323.41), MSWs (n = 336; $345.93), and MFTs (n = 103; $384.72). For patients treated for partner-relational problems with an individual modality, the most cost effective profession was MSWs (n = 388; $243.19), followed by MFTs (n = 101; $247.41), psychologists (n = 213; $324.89), and counselors (n = 299; $341.75). Because cost effectiveness was derived from

Table 1 Cost differences by profession for parent–child problems treated relationally

Relational therapy							Individual therapy						
	Profession	*n*	I	II	III	IV		Profession	*n*	I	II	III	IV
I	Counselors	96	–	−34.37	−17.45	−156.65**	I	Counselors	99	–	23.06	75.27*	−73.83*
II	MSWs	186		–	16.92	−122.29*	II	MSWs	144		–	52.21	−96.21**
III	MFTs	70			–	−139.21**	III	MFTs	53			–	−148.42***
IV	Psychologists	63				–	IV	Psychologists	63				–

Each intersection between row and column represents the average cost difference, in dollars, between the row and column professions for a given treatment episode. Amounts are derived from the row profession's average amount minus the column profession's average amount

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2 Cost differences by profession for partner-relational problems

Relational therapy							Individual therapy						
	Profession	*N*	I	II	III	IV		Profession	*N*	I	II	III	IV
I	Counselors	285	–	−107.85***	−146.88***	−85.64*	I	Counselors	299	–	−11.93	−22.52	−87.72**
II	MSWs	336		–	−39.03	22.21	II	MSWs	388		–	−10.60	−75.79**
III	MFTs	103			–	61.24	III	MFTs	101			–	−65.20*
IV	Psychologists	178				–	IV	Psychologists	213				–

Each intersection between row and column represents the average cost difference, in dollars, between the row and column professions for a given treatment episode. Amounts are derived from the row profession's average amount minus the column profession's average amount

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

a formula rather than statistical comparisons, statistical differences among groups on cost effectiveness are not reported.

Important to note is the presence of log cost in the tables depicting the components and results of the cost effectiveness calculations for the professions. Because of the nature of the data, the cost means were smaller than the standard deviations, violating the assumption of normal data distribution on the dependent variable in the regressions. Therefore, both real costs, valuable for decision makers, and log-transformed costs, valuable in determining statistical significance in group differences, are presented in Tables 3 and 4. These tables also contain recidivism and cost effectiveness for all of the examined provider types for each of the four studied patient groups.

Question 3

What is the cost effectiveness of treating patients with relational problems for each of the treatment modalities, individual, family, and mixed therapy? As with the second research question, differences among professions for average cost per patient in EoC1 and recidivism were determined with ordinary least squares regressions and binary logistic regressions, respectively. Cost and recidivism information were later incorporated into the cost effectiveness formula to determine the cost effectiveness for each of the three treatment modalities.

The OLS regressions predicting cost controlled for region, patient age, and profession type. For parent–child problems, the model was significant, F (5, 954) = 7.49, $p < 0.001$. The mixed modality was significantly different than both individual ($p < 0.001$) and family ($p = 0.003$) therapy. Family and individual modalities were not significantly different from each other. Mean costs of the three modalities in EoC1 for the treatment of relational problems were as follows: individual therapy ($212.35), family therapy ($238.96), and mixed mode therapy ($303.39). With regard to recidivism, the model was not significant, $\chi^2 = 5.18$, $p = 0.16$. Therefore, no statistical differences were found among the treatment modalities. Mean recidivism rates by the modalities for parent–child problems treated in EoC1 were as follows: individual therapy (9.75 %), family therapy (12.23 %), and mixed mode (12.90 %). Cost effectiveness was then calculated for each of the three therapy modalities. From most cost effective to least, the modalities ranked in this way: individual therapy ($233.05), family therapy ($268.18), and mixed mode ($342.53). Table 5 presents the average cost effectiveness for a single EoC by therapy modality for the treatment of parent–child relational problems.

For partner-relational problems, the model was significant, F (5, 2,349) = 23.46, $p < 0.001$. The mixed modality was significantly different than both individual and family therapy ($p < 0.001$). Family and individual modalities were also significantly different from each other ($p = 0.003$). Mean cost for the three modalities in EoC1 for the treatment of relational problems was as follows: individual therapy ($240.83), family therapy ($279.64), and mixed mode ($378.18). With regard to recidivism, the model was not significant, $\chi^2 = 6.67$, $p = 0.08$. Therefore, no statistical differences were found among the treatment modalities. Mean recidivism rates by the modalities for parent–child problems treated in EoC1 were as follows: individual therapy (7.19 %), family therapy (8.43 %), and mixed mode (9.07 %). Cost effectiveness was then calculated for each of the three therapy modalities. From most cost effective to least, the modalities ranked in this way: individual therapy ($258.15), family therapy ($303.21), and mixed mode ($412.48). Table 5 presents the average cost effectiveness for a single EoC by therapy modality for the treatment of partner-relational problems.

Table 3 Cost, recidivism, and estimated cost effectiveness by profession in the first EoC for parent–child problems

Relational therapy						Individual therapy					
Profession	*n*	Cost	Log cost	Recidivism (%)	Cost effectiveness	Profession	*n*	Cost	Log cost	Recidivism (%)	Cost effectiveness
Counselors	99	$199.17	$151.41	9.38	$217.85	MFTs	53	$162.00	$68.71	11.32	$180.34
MFTs	70	$221.45	$172.43	14.29	$253.10	MSWs	144	$202.65	$152.93	8.33	$219.53
MSWs	186	$230.55	$174.16	12.90	$260.20	Counselors	99	$209.81	$157.59	9.10	$228.90
Psychologists	63	$343.86	$242.26	12.70	$387.53	Psychologists	63	$280.90	$206.44	12.70	$316.57

Cost Average cost, in dollars, for a treatment episode of care (EoC) for the row's profession (calculated by dollars paid to provider per session times total sessions in EoC)

Log cost Natural-log-transformed average cost, in dollars, for a treatment episode of care (EoC) for the row's profession

Recidivism Rate of patient return for a second EoC after completing a first EoC for the row's profession

Cost effectiveness By profession, the average cost of the first EoC plus the average cost of the first EoC times the recidivism rate. Measures average cost effectiveness by profession for a single EoC

Table 4 Cost, recidivism, and estimated cost effectiveness by profession in the first EoC for partner-relational problems

Relational therapy						Individual therapy					
Profession	*n*	Cost	Log cost	Recidivism (%)	Cost effectiveness	Profession	*n*	Cost	Log cost	Recidivism (%)	Cost effectiveness
Counselors	285	$194.68	$152.93	7.72	$209.71	MSWs	388	$227.92	$174.16	6.70	$243.19
Psychologists	178	$296.73	$232.76	8.99	$323.41	MFTs	101	$233.54	$179.47	5.94	$247.41
MSWs	336	$311.62	$206.44	11.01	$345.93	Psychologists	213	$303.52	$219.20	7.04	$324.89
MFTs	103	$380.91	$217.02	1.00	$384.72	Counselors	299	$315.38	$162.39	8.36	$341.75

Cost Average cost, in dollars, for a treatment episode of care (EoC) for the row's profession (calculated by dollars paid to provider per session times total sessions in EoC)

Log cost Natural-log-transformed average cost, in dollars, for a treatment episode of care (EoC) for the row's profession

Recidivism Rate of patient return for a second EoC after completing a first EoC for the row's profession

Cost effectiveness By profession, the average cost of the first EoC plus the average cost of the first EoC times the recidivism rate. Measures average cost effectiveness by profession for a single EoC

Table 5 Cost, recidivism ,and estimated cost effectiveness by modality in the first EoC

Parent–child problems						Partner-relational problems					
Modality	*n*	Cost	Log cost	Recidivism (%)	Cost effectiveness	Modality	*n*	Cost	Log cost	Recidivism (%)_	Cost effectiveness
Individual	359	$212.35	$160.77	9.75	$233.05	Individual	1,001	$240.83	$179.47	7.19	$258.15
Family	415	$238.96	$177.68	12.23	$268.18	Family	902	$279.64	$194.42	8.43	$303.21
Mixed	186	$303.39	$232.76	12.90	$342.53	Mixed	452	$378.18	$200.34	9.07	$412.48

Modality Only individual therapy, only family therapy, or a combination of individual and family sessions

Cost Average cost, in dollars, for a treatment episode of care (EoC) for the row's modality (calculated by dollars paid to provider per session times total sessions in EoC)

Log cost Natural-log-transformed average cost, in dollars, for a treatment episode of care (EoC) for the row's modality

Recidivism Rate of patient return for a second EoC after completing a first EoC for the row's modality

Cost effectiveness By modality, the average cost of the first EoC plus the average cost of the first EoC times the recidivism rate. Measures average cost effectiveness by modality for a single EoC

Question 4

What are the cost differences in treating couple versus family problems with relational therapy? As stated earlier, a CPT code of 90847 for family/conjoint treatment combined with a partner-relational problem was assumed to be couples therapy for relational problems (N = 902), while the same CPT code combined with a parent–child relational problem was assumed to be a family treatment ($n = 415$).

As with other analyses predicting costs, patient age, profession type, and region were used as controls. An ordinary least squares regression revealed no significant average cost difference for couples versus family therapy treatments. The model ANOVA was significant, F (4, 3,310) = 21.67, $p < 0.001$. However, differences in cost between family and couple therapy treatment were not significant. Although the differences were not statistically significant, family therapy ($238.96) was, on average less costly than couple therapy ($279.64).

Discussion

From 2001 to 2006 a portion of Cigna patients were diagnosed with a relationship problem as the primary diagnosis and treated by one of four provider types with individual therapy, family therapy, or a combination of modalities. This study is the first of its kind, examining cost effectiveness differences among treatment providers and modalities for DSM-IV-TR relational V-codes. The information presented in this study may be useful for insurance plan managers who wish to estimate the cost of adding couples therapy treatment for relational problems to their list of provided services.

For this population, couples therapy for relational problems was relatively brief, with an average of only 5.36 sessions. The average cost for treatment was $279.64. Recidivism for this population was only 8.43 %, meaning that in the 6-year period, of those who received a couples therapy treatment for a relational problem, 91.57 % did not return for the treatment of any problems, including relational problems.

The first research question in this study was, "Which of the therapy treatment modalities, individual, family, or mixed has the greatest success (defined by patient recidivism) in treating relational problems?" Analysis indicated that there were no significant differences in recidivism for the different modalities. This result may lend credence to the systems theories indicating that a change in one part of a system (including an individual) can have a system-wide impact (Hecker et al. 2003).

On the other hand, the lack of statistical differences may indicate less about modality differences than it does about provider treatment preferences. Providers who are comfortable treating relationship problems might be more likely to provide a V-code as a primary diagnosis. If this is the case, the treatment modality may be less important than provider training in the treatment of relational problems. In fact, Moore et al. (2011) determined that those who have met specific training requirements for family therapy treatment may have better outcomes than other providers.

Future studies should examine how relational training, independent of license or provider type, influences the outcomes of the treatment of relational problems. Future studies might also determine whether training in relational problem treatment influences the likelihood that a provider would choose a relational diagnosis over another diagnosis, such as adjustment disorder. In the present data, MFTs are 69 % more likely to use a relational diagnosis than the other professions.

The second research question was, "What is the cost effectiveness for each of the professions treating patients with relational problems?". The most consistent finding across various treatment groupings was that psychologists were almost universally more costly than the other professions, except in the case of partner-relational problems treated with a relational modality. The data generally suggests that for the treatment of relational problems, no profession is clearly ahead of the others across the board. Most cost differences appear to be insignificant, monetarily.

This is good news for patients struggling with parent–child or partner-relational problems as well as for providers wanting to pay for couples or family therapy as a service to those enrolled in their programs. The nationally recognized treatment providers are all providing fairly similarly cost-effective treatment in relatively few sessions for relational problems.

Although average cost differences among the professions were often relatively small or insignificant, it is important to note the differences between statistical significance and practical significance. Results that are not statistically significant may still be economically significant because of the large numbers of patients being treated in the Cigna network. Small dollar differences across millions of patients each year add up to real dollar amount differences in treatment costs.

The present data may be of particular interest to managers of health insurance companies wishing to determine the cost impact of allowing plan participants to access therapy for family or couple relationship problems. In fact, of the 11 diagnosis categories in the data (see Crane and Payne 2011), relational diagnoses were the least costly to treat on average. Adding relational problem treatment as an option for plan participants may be a cost-efficient, valuable service for plan managers to include. This is especially true considering two issues. First, as demonstrated in the literature, family relationship problems can be linked with serious mental and physical health issues. Second, those in Cigna who were treated for a relational problem rarely returned for treatment of any other problem in the 6-year period the data covered. This may be evidence that treating relational problems can have far-reaching effects on individual mental health and possibly health care costs. More research is needed in this area.

The third research question was, "What is the cost effectiveness of treating patients with relational problems for each of the treatment modalities, individual, family, and mixed therapy?". Patients were divided up into two groups: those who were treated for parent–child problems and those who were treated for partner-relational problems. For parent–child problems, mixed mode was significantly more costly than "pure" family or individual modes. Family and individual were not significantly different from each other, which is in line with results from Bodden et al. (2008). There were no significant differences for recidivism among the modalities.

For partner relational problems, individual therapy was the least costly, with differences in costs being significant, than family or mixed modes. Recidivism differences, again, were not significant. Individual therapy seems to have somewhat of an edge over family therapy in cost effectiveness and both family and individual therapy have a strong cost effectiveness advantage over mixed mode.

Mixed mode's lower cost effectiveness compared to the other two modes may represent confusion on the part of the provider as to the most effective method of treatment, meaning that a provider may not know whether individual or family therapy (or both) is indicated for a particular case, thus engaging in more therapy sessions. It might represent a more complex and difficult relational problem. Either of these might explain the higher overall treatment costs and recidivism rates. However, these issues are not testable with the present

data. Future studies may examine therapists' choices in using a mixed treatment mode based on presenting problem complexity or other factors.

Of particular interest is the fact that the treatment of relational problems with an individual modality proved to be similarly cost effective or more cost effective than treatment of relational problems with a relational modality. It is possible that therapists working with individuals to resolve relationship-based problems may be effecting system-wide change by helping the individual client make changes (Hecker et al. 2003). Hamilton et al. (2011) suggest that family therapy may be inherently more complex than individual therapy. This increased complexity may play out in a need for more therapy sessions on average to deal with relational problems than might be needed when working with one individual. Alternatively, in line with the "good enough" model of therapy termination (Barkham et al. 2006), a single patient in treatment may decide that change has been good enough before a couple or entire family would decide the same.

The final research question was, "Are there cost differences in treating couple versus family problems with relational therapy?". The cost difference between couple and family treatments were not significant, although on average family therapy was approximately $40 per patient less expensive than couples therapy. Across millions of patients, this $40 difference, although not statistically significant, may be of practical, monetary importance to the insurer.

Finally, although some health insurers might hesitate to cover the cost of couples therapy for relational problems (Kaslow and Patterson 2006), the present data indicates that this type of treatment in managed care is relatively inexpensive, brief, and effective. The average patient who received couples therapy did so in about 5 sessions for around $280. Nearly 92 % of patients did not return after the first episode of care, for relationship problems or any other issue.

Although there is no information on whether individual plans within Cigna had caps on numbers of sessions for couples therapy, it is clear that there are no across-the-board caps for couples therapy treatment since the number of sessions ranged from 2 to 105. Therefore, it is not reasonable to assume that the low cost and number of treatment sessions is necessarily due to artificial stopping points in treatment indicated by restrictions enforced by health care plans across the board in this data. The data do indicate that couples therapy can be provided as a service for enrollees at a low cost to health insurers. Other benefits from providing such services may include overall health care use reductions (Law and Crane 2000; Crane and Christenson 2008) for those who opt to receive couple or family treatment.

Limitations

Some limitations to the present study exist. For example, patients defined as "successful" treatment cases were those who did not return for treatment after one episode and did not drop out after a single session. However, it is not known specifically whether treatment was successful or whether patients did not return for other reasons, such as dissatisfaction with treatment. It is also not possible to ascertain the outcome of patients whose first episode of care were still in progress at the end of the 6-year period.

Additionally, amount or quality of training in therapy approaches for relational problems cannot be ascertained for any individual treatment provider in the data. Therefore, it is impossible to tell whether any group differences, or lack thereof, were related to training in relational therapies. Because therapy providers selected diagnoses for patients, it is possible that providers may have self-selected into usage of V-codes as a primary diagnosis

based on treatment preferences or other factors. It is important to remember that providers, not Cigna, provided the diagnoses for patients.

Limitations aside, the data from the present study provide insight into the treatment of relational V-codes heretofore unavailable. The present study demonstrates that the treatment of relationship problems is relatively inexpensive and effective in managed care. The typical "dose" of psychotherapy for relational problems in the present study is fewer than six sessions with a recidivism rate of only about eight percent. Policymakers and managed care providers may use this data in the processes involved in determining whether to make treatment for relationship problems more widely available for individuals, couples, and families.

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