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Review and Meta-analysis of Couple-Oriented Interventions for Chronic Illness

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Abstract

Background—Evidence continues to build for the impact of the marital relationship on health as well as the negative impact of illness on the partner. Targeting both patient and partner may enhance the efficacy of psychosocial or behavioral interventions for chronic illness.

Purpose—The purpose of this report is to present a cross-disease review of the characteristics and findings of studies evaluating couple-oriented interventions for chronic physical illness.

Methods—We conducted a qualitative review of 33 studies and meta-analyses for a subset of 25 studies.

Results—Identified studies focused on cancer, arthritis, cardiovascular disease, chronic pain, HIV, and Type 2 diabetes. Couple interventions had significant effects on patient depressive symptoms (d=0.18, p<0.01, k=20), marital functioning (d=0.17, p<0.01, k=18), and pain (d=0.19, p<0.01, k=14) and were more efficacious than either patient psychosocial intervention or usual care.

Conclusions—Couple-oriented interventions have small effects that may be strengthened by targeting partners' influence on patient health behaviors and focusing on couples with high illness-related conflict, low partner support, or low overall marital quality. Directions for future research

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include assessment of outcomes for both patient and partner, comparison of couple interventions to evidence-based patient interventions, and evaluation of mechanisms of change.

Keywords

Couples; Chronic illness; Intervention; Meta-analysis

In their 2001 literature review, Kiecolt-Glaser and Newton [1] described the empirical evidence that negative aspects of marital functioning have indirect influences on health through depression and health habits and direct influences on physiological mechanisms such as cardiovascular, endocrine, and immune function. In the past 10 years evidence has continued to build for the impact of marriage on health and the subsequent implications for individuals living with chronic illness. For example, marital cohesion or quality has been linked with outcomes such as better ambulatory blood pressure in hypertension [2] and better rate of survival over 8 years in congestive heart failure [3], whereas marital strain has been shown to place women with heart disease at greater risk for recurrent coronary events over 5 years [4]. Marital confiding predicted decreased mortality over 8 years in women with Stage II or III breast cancer [5], whereas marital strain was associated with a 46% increase in risk for mortality over 3 years in end-stage renal disease [6]. Other couple characteristics with consistent effects on management of chronic illness include marital conflict, spouse criticism, and lack of congruence between patient and spouse in disease beliefs and expectations [7].

The negative impact of chronic illness on the well spouse also is now well documented in the research literature. Spouses often experience poorer psychological well-being, decreased satisfaction in their relationship with the patient, and burden associated with providing physical assistance [8]. Spouses' own physical health and self-care may become compromised over time [9–12]. Another unfortunate consequence of an ongoing illness is that spouses' ability to be supportive may erode over time and their critical or controlling behaviors may increase [13–15]. These findings have been observed across the most common chronic conditions affecting adults including heart disease, chronic pain, rheumatic disease, cancer, and diabetes [16–18].

Awareness of these reciprocal health effects in the marital relationship has led researchers to develop psychosocial or behavioral interventions that include the spouse. Although patient-oriented interventions have been shown to improve psychological well-being and symptom severity for various chronic conditions, the size of observed effects has generally been small [19–22]. Targeting both the patient and spouse may enhance the efficacy of these interventions. In comparison to patient-oriented approaches, couple interventions may have an advantage in long-term maintenance of behavioral changes, and addressing spouses' concerns may protect against erosion of their support to the patient [23].

The goal of this paper is to review the findings of randomized trials evaluating couple-oriented interventions for chronic illness. In contrast to previous reviews [24], we take a cross-disease perspective because the chronic conditions that are leading causes of morbidity and mortality share the common features of being behaviorally driven, influenced by the social environment, and negatively impacting the marital relationship. Therefore, couple-

oriented interventions for different conditions share many common features and goals, and this provides the opportunity to evaluate their efficacy as a group. In order to provide a detailed overview of work in this area, we describe characteristics of these studies and summarize statistically significant differences between couple intervention and comparison groups of either patient intervention or usual care. Because it is important to determine the impact of the couple-oriented approach regardless of the statistical significance of between-group differences, we conducted a meta-analysis of three outcomes for which there were an adequate number of effect sizes for aggregation (i.e., patient depressive symptoms, marital functioning, and pain).

Method

Identification of Studies

We searched the literature for published evaluations of interventions that focus on chronic physical illness; are psychologically, socially, or behaviorally oriented; and that involve the active participation of both the patient and spouse/intimate partner (hereafter referred to as "partner"). Studies of populations that were at risk but not yet diagnosed with illness, such as obese individuals and smokers, were excluded. In addition, we excluded studies focused on conditions affecting cognitive functioning (e.g., dementia, stroke, Parkinson's disease, Huntington's disease, traumatic brain injury) because family-oriented psychosocial interventions for these populations usually target only the individual identified as caregiver. In order to focus on research that was likely to be methodologically rigorous, we required that studies used a randomized, controlled design in which participants had an equal chance of being assigned to couples intervention or comparison group(s). We conducted computer searches in two databases on the OVID platform: Medline (1950–August 2008) and PsycINFO (1967–August 2008). AutoAlerts for searches run in each database through December of 2009 updated the authors on any new publications through that date. The search was limited to peer-reviewed journal articles, adults (age 19 and older) and English language.

Our strategy was to search for a combination of three main concepts: physical diseases, therapeutics, and dyads. The dyad concept proved to be the most complicated because terms used for this construct vary widely. Ultimately, the search was broadened to include varied terms representing the concept (e.g., couples, significant others, couples therapy) and broad family-related terms (e.g., family, family members, family therapy). The search in PsycINFO closely followed the search strategy used in Medline; however, allowances were made for the database idiosyncrasies such as use of Classification Codes which narrows the search results down to a specific content area in the database (e.g., physical disorders). We also used the ancestry method of examining references in journals and selected articles to identify additional studies not retrieved through database searching.

All couple-oriented RCTs were required to meet four criteria to be included. First, studies had to include the comparison condition of patient-oriented psychosocial intervention, patient usual medical care, or both. Studies with an attention control condition were included. Studies comparing only two or more couple-oriented interventions were excluded because they were not central to the thrust of this paper. Second, we required participation of

a partner for every patient as part of the eligibility criteria (i.e., complete dyads). We included this criterion because studies enrolling a subgroup of partners may involve unknown selection effects as a result of not requiring participation from the partner of each patient. Third, because some studies enrolled a mixture of couples and other dyads, we required that at least 75% of the sample consisted of patients and their partner. Fourth, studies had to report psychological, health, or relationship outcomes.

Meta-analytic Procedure

We calculated effect sizes from individual studies using statistics published in the original reports. We computed Cohen's d values by subtracting the control group mean from the intervention group mean and dividing this value by the pooled sample standard deviation. In cases in which descriptive statistics were not available, we computed *d* values from inferential statistics using standard formulas. When a study failed to report relevant statistics but indicated that groups did not differ with respect to an outcome, we assumed that there was no difference between the groups ($d=0$). Because seldom is there no difference at all between two groups, this process represents a very conservative strategy. We computed effect sizes from the first available follow-up because there were not enough studies with a second follow-up to examine the durability of treatment effects. For studies comparing more than one couple intervention with a comparison group, one effect size was calculated by averaging across the effect sizes for each comparison.

The Comprehensive Meta-analysis software program [25] was used to aggregate effect size estimates from individual studies. This program weights each *d* statistic before aggregation by multiplying its value by the inverse of its variance; this procedure enables larger studies to contribute to effect size estimates to a greater extent than smaller ones. We conducted both fixed effect and random effects meta-analyses. There was little evidence of heterogeneity across studies for the three patient outcomes that we examined, and the findings for the fixed effect and mixed effect analyses were very similar. Therefore, we present findings from the fixed effect models.

We determined whether each aggregate effect size was statistically significant. To examine whether the studies contributing to each aggregate effect size shared a common population value, we computed the heterogeneity statistic *H* [26]. The *H* is an easily interpretable measure of heterogeneity within a group of studies and has greater statistical power than the *Q* test when the number of studies to be included is small. The indirect treatment meta-analysis method was used to evaluate the significance of differences in effect sizes based on the group that was compared to couple intervention (i.e., patient psychosocial intervention or usual care). Based upon a common group across comparisons (i.e., couple-oriented psychosocial/behavioral intervention), this method allows for differences in effect sizes to be evaluated [27].

Results

Characteristics of the Studies

A total of 50 RCTs were identified and 33 of these studies met all criteria for inclusion. These 33 studies were reported in 40 articles. Of the 17 studies that were excluded from our review, three included only a second couple intervention comparison group; six did not require partner participation for every patient; seven did not include a sample of at least 75% partners; and one study reported only satisfaction with the intervention as an outcome.

Table 1 provides a summary of study characteristics. The illness most commonly targeted in this group of studies is cancer (k=13; 39%). Overall, 96.7% of the dyads in these samples were couples. Patients and partners in these studies were in their mid-50s on average. Approximately half of these studies (46%) compared couple-oriented intervention to patient usual medical care only. Consistent with the broader intervention literature, most of the couple interventions were multi-component in nature and often included education of patient and partner regarding chronic illness and its management, enhancement of communication or support within couples, and cognitive-behavioral training. Borrowing from Baucom and colleagues' [28] system for characterizing family-oriented interventions, most of the couple interventions can be classified as disorder-specific in that they targeted illness-specific issues of both patient and partner, either together or with patient and partner separately in several cases [29–31]. In many cases, these interventions addressed the role of relationship functioning in illness management. In contrast, only three studies used a partner-assisted type of approach as described by Baucom and colleagues, where the partner's role was to help the patient meet cognitive or behavioral objectives of the intervention (i.e., pain management, problem-solving, or relaxation) [32–34].

The number of sessions that were included in couple interventions ranged from 3 to 20. Reflecting a recent trend in intervention research, eight couple interventions were implemented either partially or entirely over the telephone [29–31, 35–40]. A total of 14 studies tested a couple-oriented intervention in a group format (i.e., two or more couples received the intervention together).

Assessment of patient outcomes focused primarily on psychological functioning (e.g., depressive symptoms, coping, self-efficacy for managing illness); health indicators such as illness-specific symptoms, sexual function, pain, and general physical functioning; and marital functioning (e.g., satisfaction, partner support).) Physiological outcomes were examined in four studies and included viral load and CD4 cell count in HIV [41], glycosylated hemoglobin and fasting blood sugar in Type 2 diabetes [42], erythrocyte sedimentation rate in rheumatoid arthritis [43], and blood pressure in hypertension [34]. Health behaviors were examined in four studies and included adherence to antiretroviral medication [41] as well as diet or exercise [42, 44, 45].

For partners, pre-post data were collected in 19 out of 33 studies (58%). Assessment of partner outcomes focused primarily on psychological functioning (e.g., depressive symptoms, self-efficacy for helping patient, caregiving stress) and marital functioning (e.g., satisfaction, quality of communication). Partners' physical health was examined in four

studies and included perceived health, weight, and fasting blood sugar. Health behaviors were examined in only one study, which assessed change in partner diet and exercise [42].

Study Findings

Table 2 describes each study according to sample, study groups, timing of follow-up, and significant between-group differences for patient and partner.

Effects on Patients

A total of 32 studies examined between-group differences whereas one did not [46]. Of these studies, 18 (56%) found consistent differences favoring couple intervention over usual care or patient psychosocial intervention [31, 33–35, 39–41, 44, 47–57]. All types of patient outcomes and chronic illnesses were represented in this group, with the exception of the Type 2 diabetes study which showed mixed effects according to gender (described below). A total of 7 studies (22%) found no differences between groups [29, 30, 32, 38, 43, 58, 59].

Of the remaining seven studies, six showed mixed effects according to outcome variable, patient gender, and type of couple intervention. Cardiac surgery patients in a couple intervention had greater increased efficacy but less tolerance for emotional distress than those receiving a patient-oriented intervention [36, 37]. Osteoarthritis patients in a couple intervention reported more improvement in spouse supportiveness but less improvement in pain and disability than those receiving a patient-oriented intervention [60, 61]. Wing and colleagues found that women with Type 2 diabetes showed greater weight loss from a couple intervention whereas men with Type 2 diabetes showed greater weight loss from patient intervention [42].

Couple-oriented cognitive-behavioral interventions for arthritis patients were more beneficial than cognitive-behavioral patient interventions, but couple-oriented education interventions did not show this advantage [62–64]. Not surprisingly, patient-oriented exercise was more beneficial than a couple-oriented cognitive-behavioral intervention for outcomes that were fitness related [65]. Finally, Riemsma and colleagues reported negative effects of a couple-oriented education intervention on patient fatigue and self-efficacy [45],

Effects on Partners—Between-group differences were examined in 17 of the 33 studies. Of these studies, six (35%) consistently found differences favoring couple intervention over usual care or patient psychosocial intervention [32, 39, 40, 50, 60, 66] (see Table 2). Specifically, couple interventions enhanced partners' psychological functioning (i.e., self-efficacy stress, mastery, anxiety) and perceptions of marital quality and coping as a couple. Cancer, hypertension, and osteoarthritis were represented in this group of studies. A total of ten studies (59%) found no differences between groups [30, 35–38, 43, 53, 57–59, 62, 63, 67]. The remaining study on obese spouses of adults with Type 2 diabetes found an advantage of couple intervention over patient psychosocial intervention in terms of weight loss and eating behaviors but an advantage of patient psychosocial intervention for enhanced partner support [42],

Many of these studies suffered from methodological problems that could be corrected in future research. First, studies rarely reported findings from both intent-to-treat and

completers analyses. That is, it was often unclear if analyses focused on all participants who were randomly assigned to couple intervention regardless of whether they received it, or focused only on participants who received the couple intervention. Findings from completers analyses are valuable but may obscure selection effects and make it difficult to interpret findings from an RCT. Second, little information was provided regarding number of sessions attended by patients and partners. Incomplete implementation is a particular concern in psychosocial and behavioral interventions and less than full participation by partners may underestimate the effects of an intervention designed for couples.

Another methodological limitation is that many of the studies that did not find between-group differences for patient or partner were statistically underpowered to do so (i.e., less than approximately 50 participants per group for the detection of medium-sized effects). However, five of these studies did find significant time effects of couple intervention indicating improvement over time for patients [43], partners [35], or both [38, 58, 59]. Because meta-analysis summarizes the average impact of an intervention regardless of the statistical significance of between-group differences, we conducted this type of analysis in addition to our qualitative review.

Meta-analytic Findings

Our meta-analysis focused on outcomes for which there were an adequate number of effect sizes for aggregation. We set this number at $k \geq 10$ for either type of comparison (i.e., couple intervention versus patient psychosocial intervention or usual care) because there is limited statistical power for meta-analysis and bias in the *H* heterogeneity statistic with fewer than eight to ten studies [26, 68]. Applying this criterion, the following three patient outcomes qualified for meta-analysis: depressive symptoms, marital functioning, and pain. Of the 33 studies identified for our review, a total of 25 were subjected to meta-analysis. The number of studies included in the analyses for depressive symptoms, marital functioning, and pain were 20, 18, and 14, respectively.

We conducted separate analyses according to whether the study compared couple intervention to patient psychosocial intervention or usual care. The study by Nezu and colleagues [33] was not included in the analysis of patient depressive symptoms for the comparison of couple intervention and usual care because the effect size was an extreme outlier (d=4.36). Results were then pooled to determine the overall effect size for studies with either type of comparison group. Because some studies included both comparison groups, there was overlap in these analyses (k= 4 for marital functioning and k=5 for depressive symptoms and pain). For those studies that included both comparison groups, one averaged effect size was submitted in the overall analyses for each outcome.

Depressive symptoms were most often assessed with the Center for Epidemiological Studies—Depression scale [69] or the Brief Symptom Inventory [70]. Marital functioning was assessed with global measures of relationship quality such as the Dyadic Adjustment Scale [71] or specific measures of partner emotional or instrumental support [72, 73]. Current or usual pain was assessed with visual analogue scales or other established measures such as the Arthritis Impact Measurement Scales [74]. For studies involving more than one measure

of an outcome, one effect size was calculated by averaging across the effect sizes for each measure.

As shown in Table 3, a statistically significant effect of couple intervention was present in the overall analyses for all three patient outcomes. That is, couple interventions were successful in reducing patients' depressive symptoms, enhancing marital functioning, and reducing pain. All effect sizes were small in magnitude. An *H* value of 1 indicates homogeneity of intervention effects; therefore, the values in Table 3 show that that there was little heterogeneity in the effect sizes of this group of studies. The indirect meta-analysis estimate compares the magnitude of effect sizes across the two comparison groups. In all cases the 95% confidence interval overlapped 0 and this indicates that there were no differences in effect sizes as a function of comparison group.

Discussion

In this review, we found that couple-oriented interventions targeted the most common and deadly illnesses in adulthood (e.g., cancer and heart disease) as well as the most disabling (e.g., arthritis) [75]. These illnesses require substantial behavioral changes, self-management, and treatment decision making, all of which are likely to be strongly influenced by the attitudes and behaviors of the spouse. Only one of the studies identified for our review targeted Type 2 diabetes despite its prevalence and the rising incidence of obesity. Clearly more research is warranted with this population.

Findings from our meta-analysis suggest that couple-oriented interventions for chronic illness hold promise. There were small improvements in patient depressive symptoms, marital functioning, and pain. The lack of heterogeneity within studies indicates that the interventions included in our review had similar effects despite varying illness populations and intervention content and suggests that it is useful to take a cross-disease perspective on dyadic interventions. Along these lines, it may be valuable to develop standard couple-oriented intervention content that can be applied to multiple chronic conditions, similar to the approach taken in the Chronic Disease Self-Management Program that was developed for heart disease, lung disease, stroke, and arthritis [76]. It would also be highly useful for researchers to develop a battery of common outcome measures to be used across illness populations in order to better synthesize this literature going forward [77].

The aggregate effects that we found in our meta-analyses were small in magnitude, raising the question of how the impact of couple-oriented interventions could be strengthened. One possible strategy for enhancing their impact is to place greater emphasis on targeting spouse communications and actions that influence patient health behaviors. There is a high rate of concordance between partners' health-enhancing and health-compromising behaviors (e.g., smoking, drinking, dietary habits, body mass index, and level of physical activity) [78–80]. These findings, as well as recent work linking autonomy support and health-related social control with disease management, could inform future couple interventions. Autonomy support includes understanding for an individual's situation and provision of choices for making health behavior changes [81]. Social control involves attempts to regulate or influence the behaviors of another person through actions, affective responses, and

corrective feedback [82]. Based on recent findings in these areas of research, future couple-oriented interventions may be useful in teaching spouses how to support patients' need to make their own choices, as well as positive tactics for encouraging healthy behaviors such as persuasion, modeling, and reinforcement.

Relatedly, the literature on couple-oriented interventions for at-risk groups (e.g., obese individuals, smokers) that received much attention in the 1970s and 1980s is worth revisiting. Behavioral weight-loss interventions that involve a support partner have been successful and could be applied to ill populations [83, 84]. And although couple-oriented interventions for smoking cessation have had disappointing effects, this has been attributed in part to their failure in achieving substantial change in partner support [85, 86].

A second strategy for strengthening couple interventions is to directly target partners' well-being and worries about the future. Findings from the family caregiving intervention literature suggest that addressing such issues is necessary for reducing emotional contagion in couples and garnering partners' ongoing support [8]. Specifically, it is important to provide spouses with information about the illness and possible treatment options; validate their experiences as a provider of support; teach them various stress management skills; and help them to plan for the future. The value of such content seems especially important in consideration of the fact that the partner often suffers from the same chronic condition as the patient due to shared lifestyles and exposure to environmental stressors, as was reported in studies included in our review [47, 60].

Couple-oriented interventions may also have a greater impact on couples with a high level of conflict related to the illness or a low level of partner support for symptom management and behavioral change. Manne and colleagues [52] found that the positive effects of a couple-oriented intervention on breast cancer patients' depressive symptoms were stronger for patients with husbands who were unsupportive (e.g., critical of how the patient handled cancer and uncomfortable talking about the cancer with her). None of the studies that we reviewed included eligibility criteria related to spouse support or distress, possibly reducing the size of intervention effects.

Overall marital quality may also be an important moderator of treatment effects. It has been argued that marital quality may serve as an interpretive backdrop that alters patients' appraisal of spousal behaviors and therefore the impact of those behaviors on health [1]. For example, well-intentioned but unhelpful behaviors of the spouse may be perceived positively by patients in happy marriages and negatively by those with dissatisfying marriages. By extension, individuals with low overall marital quality may experience greater benefits from a couple-oriented intervention than those with high marital quality. In future research it will be important to address the extent to which marital problems that existed prior to a chronic illness can be addressed within a couple-oriented intervention.

Approximately half of the studies that we reviewed reported that patients receiving a couple-oriented intervention showed greater improvements than those receiving usual care or patient psychosocial intervention. Of the studies that examined benefits for the partner, approximately one third found that couple-oriented interventions led to improvements in

their psychological and marital functioning. Although it is difficult to draw strong conclusions from this relatively small group of studies with different types of intervention content, cognitive-behavioral strategies such as coping skills training for couples seemed to be the most consistently successful.

Baucom and colleagues [28] noted that dyadic family interventions differ in the extent to which they focus on interpersonal issues. Some interventions address communication or relationship issues between patient and family member that might contribute to the maintenance or exacerbation of an illness, whereas other interventions take the approach of enlisting the family member's help in changing the patient's behaviors. Most of the couple interventions that we reviewed targeted illness-specific issues of both patient and partner whereas few took the approach of enlisting the partner as a coach in the patient's psychosocial or behavioral treatment. Although less intensive from a dyadic perspective, the partner-assisted approach might make more sense for couples who are managing the illness well. For these couples, relationship distress would not be a target of intervention. However, information about the illness and tactics for making lifestyle changes may serve to enhance the sense that each partner is working together to manage the illness, and may help to maintain spouse support over the long term. Taking a less intensively dyadic approach with some couples may enhance retention of participants, engagement in the intervention, and generalizability of study findings to a broader population of couples.

A potential trade-off that was salient in this group of studies is that of a group format intervention versus treating individual couples. Treating couples together in a group rather than separately is more economical but limits the ability to discuss relationship issues in depth if necessary or to address the varying needs of couples. As noted by other researchers [87], the most successful interventions may be those that are tailored or adapted to the needs of individual couples.

Improvements in methodological quality and attention to published guidelines for reporting clinical trials [88–90] are much needed in this area of research. The most important and feasible issues to address are use of intention-to-treat analyses, reporting of patient adherence to treatment (e.g., number of sessions attended), and power analyses. Many studies had inadequate statistical power to detect the small intervention effects that are common in psychosocial intervention research, including the additional power that is often needed to detect differences between two active interventions [91].

Limitations of our Review

It is important to acknowledge several limitations of this review. First, our meta-analysis did not include unpublished studies. Our focus was on published, peer-reviewed studies because we thought that they would be most methodologically rigorous and thus yield the strongest conclusions in regard to efficacy. Second, our analyses did not take into account that population effect sizes may be overestimated owing to a tendency for null findings to not appear in the published literature. We did not make statistical corrections for publication bias, because these corrections are often overly conservative when a small number of studies are aggregated, as was true for our outcomes. Because of these decisions, our meta-analytic findings should be considered preliminary and in need of corroboration.

Directions for Future Research

We would like to highlight four design and measurement issues for researchers to consider in future research testing couple-oriented interventions. Our first recommendation is that investigators explicitly reference the models and observational research that led them to use a couple-oriented approach and the specific aspects of the marital relationship that were targeted. We found that the majority of studies failed to describe how theory was used in the development of intervention materials. Other researchers also have noted that couple interventions are rarely conceptually driven nor do they often identify specific targets for change [7]. Although specific theoretical or conceptual models are rarely tested in couple-oriented intervention research, researchers sometimes cite the biopsychosocial model of health and illness, marital and family systems frameworks, or stress and coping models that are modified for the caregiving or care-receiving context.

Second, evaluation of change in marital or spouse factors is critical for establishing that effects of the intervention on primary outcomes occurred through these mechanisms. Although many studies addressed relationship issues, only half (55%) examined change in any indicators of marital functioning. We return to these issues of theory and mechanisms in our description of an additive model for couple-oriented interventions.

A third recommendation is to assess outcomes for the partner as well as for the patient. Failure to assess effects on both patient and partner provides an incomplete picture regarding efficacy. Lack of improvement for the patient may be explained by negative (but unexamined) effects on the partner. For example, a couple-oriented intervention that fails to address the partner's needs or concerns may lead to more negative marital interactions or lack of support for the patient's behavioral changes. This phenomenon reflects the cyclical nature of marital interactions in daily life, in that a partner's affective and behavioral reactions to the patient serve to influence that patient's health and well-being, which in turn drives future reactions. Assessing the partner's perspective on change in marital interactions is especially important because individuals do not always recognize having received support even when they benefitted from it [92]. Other research teams have also argued for examining the appraisal and coping strategies of both patient and partner in relation to each other [14, 93–95].

Assessment of both patient and partner paves the way for dyadic analysis as an alternative to focusing separately on patient and partner changes, as exemplified in two of the studies that we reviewed [40, 50], and may include dyadic growth curve modeling [96] or dual change score modeling [97]. In addition, studies that collect daily diary data from both patient and partner (an increasingly common approach) and use multilevel analyses for time-series data can indicate the stronger directional influence in associations between patient and partner functioning. Finally, a dyadic approach to assessment will allow for better cost-benefit analyses as this field progresses. That is, it will be important to weigh the benefits of couple-oriented intervention for both patient and partner against the costs associated with targeting both individuals.

A fourth recommendation for future research is to compare couple- and patient-oriented approaches to intervention. This design feature is especially useful to the field of behavioral

medicine due to great interest in the most efficacious psychosocial or behavioral treatments for chronic illness, yet it was included in only half of the studies that we reviewed. This is also a superior study design for examining the unique effects of marriage on health, as depicted in Fig. 1. This model depicts the influence of factors within three broad and interrelated domains (psychological, behavioral, and marital/partner) on patient health. Consistent with other conceptual frameworks [1, 98, 99], this model specifies that marital functioning affects patient health directly through physiological parameters and indirectly through changes in patient psychological functioning and health behaviors. To the marital domain, we add partners' own psychological functioning and health behaviors because of their linkages with patient functioning in these same areas [80, 100].

As depicted in the figure, couple-oriented interventions are likely to have benefits beyond a traditional patient-oriented approach due to their effects on marital/partner functioning (indicated by the largest arrow) in addition to their effects on patients' psychological functioning or health behaviors. This research question could be tested using an additive/constructive treatment design where a couple component is added to a standard patient intervention [101]. Interventions that successfully modify marital or partner functioning and then measure change in patient outcomes would enhance our understanding of the role of marriage in health. Moreover, these interventions could provide critical information regarding the unique and shared pathways leading to recovery from different health conditions. In contrast to the comparison of couple intervention to usual care, the type of design depicted in Fig. 1 can help to confirm that greater improvements in patient health resulting from couple intervention are due at least in part to change in marital/partner functioning and not only due to change in patient psychological functioning or health behaviors.

Conclusions

The vast majority of adults living with a chronic illness are partnered, and this close relationship plays a critical role in illness management. In turn, chronic illness takes a toll on the well partner. Targeting both patient and partner in a psychosocial or behavioral intervention is an approach that merits evaluation. Few randomized trials have been designed to compare couple- and patient-oriented approaches, making it difficult to evaluate the "relative" efficacy of a couples approach. Our review indicates that couple-oriented interventions are promising but efforts are needed to strengthen future studies both conceptually and methodologically. The added health care costs of targeting the partner may be small when considering the potential benefits to both members of the dyad and subsequent gains for the larger family unit.

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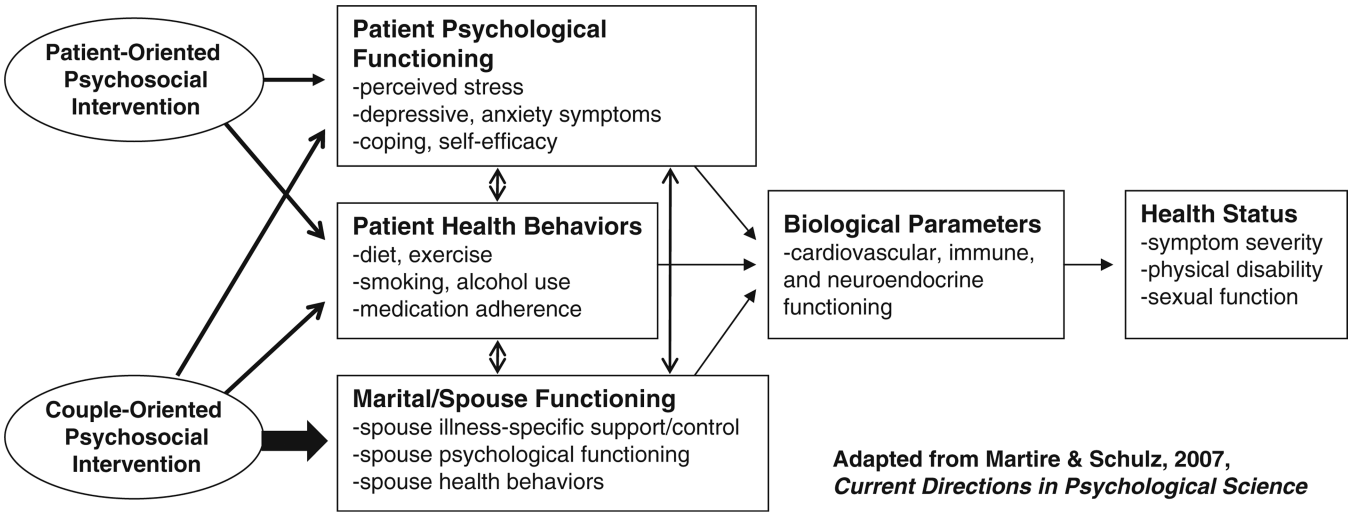

Figure 1.

This heuristic model illustrates the potential added benefit to patient health of couple-oriented intervention as compared to patient-oriented intervention, due to its effects on an additional domain of functioning (i.e., marital/partner). Examples of specific constructs are provided for each domain of functioning. Adapted from Martire and Schulz [23]

Table 1

Study characteristics (*K*=33)

	No. of studies
Illness populations	
Cardiovascular disease or hypertension	6
Prostate cancer	5
Mixed cancer	4
Breast cancer	4
Osteoarthritis	4
Chronic pain	4
Rheumatoid arthritis	3
HIV	2
Type 2 Diabetes Mellitus	1
Average Age	54.7 years (patients); 56.1 years (spouses)
Group(s) Compared to Couple-Oriented Intervention	
Patient usual medical care or attention control	15
Patient psychosocial/behavioral intervention	8
Both of the above	10
Couple-oriented intervention content[a] Education	16
Partner support/communication enhancement	11
Relationship counseling/enhancement	10
Cognitive-behavioral/coping skills training	9
Behavioral therapies/Problem-solving therapy	9
Exercise/weight loss/health behavior change	3
Patient outcomes assessed (*k*=33)	
Psychological functioning	30
Physical health	23
Marital functioning	18
Health behaviors	4
Medication adherence	1
Spouse outcomes assessed (*k*=19)	
Psychological functioning	16
Marital functioning	11
Physical health	4
Health behaviors	1

[a]Total is greater than 33 because many studies tested multi-component couple interventions

Table 2

Summary of RCTs evaluating couple-oriented interventions (*K*=33)

First author (year)	Sample	Groups and follow-Up	Between-group differences for patients	Between-group differences for partners
Badger, 2007	98 breast cancer patients and partners (77% spouses)	**1** Couple attention control (informational pamphlets and nondirective telephone calls for 6 weeks) **2** Couple education and interpersonal counseling via telephone; 6 sessions for patients and 3 sessions for partners **3** Couple exercise protocol directed via telephone; 6 sessions for patients and 3 sessions for partners Patients and partners treated separately Follow-up: Post-intervention and 1 month	No significant differences between groups	No significant differences between groups
Baucom, 2009	14 breast cancer patients and spouses	**1** Patient usual medical care **2** Couple relationship enhancement for 6 sessions Follow-up: Post-intervention and 12 months	Between-group differences not examined. Between-group effect sizes favored Group 2 at post-intervention and 12 months for psychological functioning, marital functioning, and medical symptoms.	Between-group differences not examined. Between-group effect sizes favored Group 2 at post-intervention and 12 months for psychological functioning and marital functioning.
Campbell, 2007	30 African-American prostate cancer patients and partners	**1** Patient usual medical care **2** Couple coping skills training for 6 sessions via telephone Follow-up: Post-intervention	2> 1 for bowel symptoms	No significant differences between groups
Canada, 2005	51 prostate cancer patients and wives	**1** Patient education, counseling, and skills training for 4 sessions **2** Couple education, counseling, and skills training for 4 sessions Follow-up: Post-intervention, 3 months, 6 months	No significant differences between groups	No significant differences between groups
Christensen, 1983	20 post-mastectomy patients and husbands	**1** Patient usual medical care **2** Couple counseling for 4 weeks Follow-up: Post-intervention	No significant differences between groups	No significant differences between groups
Fife, 2008	87 HIV patients and partners	**1** Patient nondirective support for 4 sessions via telephone **2** Dyad communication, stress appraisal, adaptive coping strategies, and support building within and outside the dyad, for 4 sessions	2> 1 for hostility, guilt, constructed meaning, number of coping strategies, total coping strategies, and active coping at post-intervention 2> 1 for total negative affect, hostility, guilt,	Partner outcomes were assessed but included only as covariates in patient analyses.

First author (year)	Sample	Groups and follow-Up	Between-group differences for patients	Between-group differences for partners
			joviality, and constructed meaning at 3 months	
		Patient and partner treated separately Follow-up: Post-intervention and 3 months		
Fridlund, 1991	116 post-myocardial in farction (MI) patients and spouses	**1** Patient usual care **2** Couple support and health behavior change, in hospital and weekly sessions after discharge for 6 months. Some sessions conducted in group format. Follow-up: Post-intervention and 6 months	2> 1 for exercise test, pain, exertion, leisure, exercise, sexual intercourse, breathlessness, fatigue, and fitness at 6 months 2> 1 for reinfarction, satisfaction with partner situation, physical exercise, sexual intercourse, breathlessness, chest pain, and fitness at 12 months	No outcomes were reported.
Giesler, 2005	99 prostate cancer patients and partners (96% spouses)	**1** Patient usual medical care **2** Dyad tailored education and problem solving for 6 sessions (4 via telephone) Follow-up: 4 months, 7 months, and 12 months	2> 1 for sexual function at 4 months 2> 1 for sexual limitation at 7 months and 12 months 2>1 for cancer worry at 12 months 2> 1 for urinary bother in patients with low depressive symptoms at 4 months and 7 months 2> 1 for physical role function in patients with high depressive symptoms at 12 months	No outcomes were reported.
Gortner, 1988; Gilliss, 1990	67 cardiac surgery patients and spouses	**1** Patient in-hospital education **2** Couple in-hospital education followed by telephone support for 8 weeks Follow-up: 3 months and 6 months post-discharge	2> 1 for self-efficacy in lifting at 3 months, and 1>2 for tolerating emotional distress at 3 months	No significant differences between groups
Hartford, 2002	131 coronary artery bypass graft surgery patients and spouses	**1** Patient usual medical care **2** Couple education and support at discharge and 6 telephone calls over 7 weeks Follow-up: 3 days, 4 weeks, and 8 weeks post-discharge	No significant differences between groups	No significant differences between groups
Keefe, 2005	56 advanced cancer patients and partners (most were spouses)	**1** Patient usual medical care **2** Dyad pain management training for 3 sessions	No significant differences between groups	2>1 for self-efficacy in helping patient to control pain and other symptoms

First author (year)	Sample	Groups and follow-Up	Between-group differences for patients	Between-group differences for partners
		Follow-up: Post-intervention		
Keefe, 2004	84 knee osteoarthritis patients and spouses	**1** Patient usual medical care **2** Patient exercise training for 36 sessions. Group format. **3** Couple cognitive-behavioral coping skills training for 12 sessions. Group format. **4** Couple cognitive-behavioral coping skills training (12 sessions) with patient exercise training (36 sessions). Group format. Follow-up: Post-intervention	4>3 for aerobic fitness; leg extension; and leg flexion 4>2 for coping attempts; pain control and rational thinking; and self-efficacy 4> 1 for aerobic fitness, leg extension, leg flexion, bicep curl, coping attempts, pain control and rational thinking, and self-efficacy 3>2 for coping attempts	No outcomes were reported.
		Follow-up: Post-intervention	2>3 for aerobic fitness, leg extension, leg flexion, and bicep curl 3>1 for coping attempts and self-efficacy 2> 1 for leg extension, leg flexion, and bicep curl.	
Keefe, 1996, 1999	87 knee osteoarthritis patients and spouses	**1** Patient cognitive-behavioral coping skills training for 10 sessions. Group format. **2** Couple education for 10 sessions. Group format. **3** Couple cognitive-behavioral coping skills training for 10 sessions. Group format.	At post-intervention: 3>2 for pain, pain behavior, psychological disability, coping attempts, self-efficacy, and marital adjustment 1>2 for coping attempts, marital adjustment, and self-efficacy At 6 months: 3>2 for pain control and rational thinking, and pain self-efficacy	No significant differences between groups.
		Follow-up: Post-intervention, 6 months, and 12 months	1>3 for marital adjustment 1>2 for coping attempts At 12 months: 3>2 for self-efficacy 1>2 for physical disability	
Kole-Snijders, 1999	174 chronic low-back pain patients and significant others (most were spouses)	**1** Patient usual care, wait list for patient operant behavioral intervention **2** Patient operant behavioral intervention. Group format. **3** Dyad operant behavioral intervention and patient cognitive coping skills training for 12 sessions. Group format. **4** Dyad operant behavioral intervention and patient group	At post-intervention: 4, 3>1 for three composite factors: motoric behavior (pain behavior and activity tolerance); coping control (pain coping, pain control); and negative affect (catastrophizing, pain, depression, fear) 4>3 for coping control	No outcomes were reported.

First author (year)	Sample	Groups and follow-Up	Between-group differences for patients	Between-group differences for partners
		discussion for 12 sessions. Group format.		
		Follow-up: Post-intervention, 6 months, 12 months. Group format.		
		Experimental groups 1, 3, and 4 compared at post-intervention. All follow-up time points used to compare groups 2, 3, and 4.		
Kuijer, 2004	48 mixed cancer patients and spouses	**1** Patient usual care, wait list **2** Couple counseling for 5 sessions	2> 1 for overinvestment/ underbenefit, underinvestment/ overbenefit, relationship quality, and depressive symptoms at po st-intervention	2>1 for overinvestment/ underbenefit, underinvestment/ overbenefit, and relationship quality at post-intervention
		Follow-up: Post-intervention and 3 months	Effects were generally maintained at 3 months.	Effects were generally maintained at 3 months
Lenz, 2000	38 coronary artery bypass graft surgery patients and family members (78% spouses)	**1** Patient standard discharge care **2** Dyad counseling, support and problem solving for 12 sessions. Some sessions conducted over the telephone. Some sessions conducted in group format.	No significant differences between groups	No significant differences between groups
		Follow-up: 3–4 days post-surgery; 2, 4, 6, and 12 weeks post-discharge		
Manne, 2005, 2007	238 early stage breast cancer patients and husbands	**1** Patient usual medical care **2** Couple stress management, coping, and communication for 6 sessions. Group format	At 6 months: 2> 1 for depressive symptoms	No outcomes were reported.
		Follow-up: post-intervention and 6 months	2> 1 for loss of behavioral and emotional control in women with unsupportive partners and women with more physical impairment 2> 1 for well-being in women with unsupportive partners 2> 1 for depressive symptoms in patients with high emotional processing; high emotional expression; and a high level of acceptance	
Martire, 2003	24 women with hip or knee osteoarthritis and husbands	**1** Patient education and support enhancement for 6 sessions. Group format. **2** Couple education and support enhancement for 6 sessions. Group format.	2> 1 for arthritis self-efficacy at post intervention	No significant differences between groups

First author (year)	Sample	Groups and follow-Up	Between-group differences for patients	Between-group differences for partners
		Follow-up: Post-intervention		
Martire, 2007, 2008	193 hip or knee osteoarthritis patients and spouses	**1** Patient usual medical care **2** Patient education and support enhancement for 6 sessions. Group format. **3** Couple education and support enhancement for 6 sessions. Group format.	2>3 for pain and general arthritis severity at 6 months 3>2 for punishing spousal responses at post-intervention, and for supportive spousal responses at 6 months	3>2 for perceived stress at post-intervention 3>2 for caregiver mastery at post-intervention in spouses with high marital satisfaction
		Follow-up: Post-intervention and 6 months		At 6 months, 3>2 for stress in female spouses and for depressive symptoms in spouses with high marital satisfaction
Mishel, 2002	240 prostate cancer patients and partners (84% spouses)	**1** Patient usual medical care **2** Patient education, cognitive refraining, problem solving, and provider communication training for 8 sessions via telephone **3** Dyad education, cognitive refraining, problem solving, and provider communication training for 8 sessions via telephone	2> 1 for cognitive refraining and problem solving at 4 months 3>1 for number of symptoms at 4 months for Caucasian men 2> 1 for number of symptoms at 7 months for African-American men	No outcomes were reported.
		Follow-up: 4 months and 7 months. Analyses focused on baseline to 4 months and 4 months to 7 months		
Moore, 1985	43 chronic pain patients and spouses	**1** Patient usual medical care, wait list **2** Patient cognitive-behavioral therapy for 8 sessions. Group format. **3** Dyad cognitive-behavioral therapy for 8 sessions. Group format	3, 2> 1 for pain, somatization, and spouse report of patient psychosocial adjustment at post-intervention.	No outcomes were reported.
		Follow-up: Post-intervention and 3 months. Comparisons with Group 1 conducted only with post-intervention data.		
Nezu, 2003	133 mixed cancer patients and family members (95% spouses)	**1** Patient usual care, wait-list **2** Patient problem-solving therapy for 10 sessions **3** Dyad problem-solving therapy for 10 sessions	At post-intervention, 3>1 for negative mood, depression, cancer-related problems, psychiatric symptoms, family reported interpersonal/social behavior, global psychological distress, and problem-solving ability	No outcomes were reported.
		Follow-up: Post-intervention, 6 months, and 12 months Only Groups 2 and 3 were compared at 6 and 12 months.	At post-intervention, 2>1 for negative mood, depression, cancer-related problems, psychiatric symptoms, family reported interpersonal/social behavior, global	

First author (year)	Sample	Groups and follow-Up	Between-group differences for patients	Between-group differences for partners
			psychological distress, and problem-solving ability At 6 and 12 months, 3>2 for negative mood and psychiatric symptoms	
Northouse, 2007	235 prostate cancer patients and spouses	**1** Patient usual care **2** Dyad tailored education; enhancement of couples communication and support; coping effectiveness, uncertainty reduction, and symptom management. Three home visits and two telephone sessions. Follow-up: 4 months, 8 months, and 12 months	2> 1 for uncertainty and communication with spouse at 4 months	2>1 for mental health, patients' cancer specific quality of life, negative appraisal of caregiving, uncertainty, hopelessness, self-efficacy, communication, general distress from patient symptoms, and distress from patient urinary incontinence at 4 months 2>1 for physical health, uncertainty communication, and distress from patient urinary incontinence at 8 months 2>1 for physical health, self-efficacy, communication, and active coping at 12 months
Radojevic, 1992	59 rheumatoid arthritis patients and friends/ family members (81% spouses)	**1** Patient usual medical care **2** Patient behavior therapy for 6 sessions. Group format. **3** Dyad behavior therapy for 6 sessions. Group format. **4** Dyad education and support for 6 sessions. Group format. Follow-up: Post-intervention and 2 months	2, 3>1, 4 for reduced joint swelling and number of swollen joints at post intervention and 2 months 3>2, 1, 4 for reduced joint swelling and number of swollen joints at post-intervention	No outcomes were reported.
Remien, 2005	215 HIV-positive patients and partners	**1** Patient usual medical care **2** Couple education, communication, problem-solving and support for 4 sessions Follow-up: 2 weeks, 3 months, and 6 months	2> 1 for prescribed medication doses taken at 2 weeks 2> 1 for prescribed medication doses taken within time window at 2 weeks, 3 months, and 6 months	No outcomes were reported.
Riemsma, 2003	218 rheumatoid arthritis patients and family members (88% spouses)	**1** Patient usual medical care **2** Patient education for 5 sessions. Group format. **3** Dyad education for 5 sessions. Group format	2>3 for fatigue and self-efficacy re: other symptoms at 12 months 1>3 for fatigue and self-efficacy re: other symptoms at 12 months	No outcomes were reported.

First author (year)	Sample	Groups and follow-Up	Between-group differences for patients	Between-group differences for partners
		Follow-up: Post-intervention, 6 months, and 12 months	2> 1 for self-efficacy re: other symptoms at 12 months	
Saarijarvi, 1991a 1991b,1992	59 chronic low back pain patients and spouses	**1** Patient usual medical care **2** Couple therapy for 5 sessions	2> 1 for marital communication at 12 months	No significant differences between groups.
		Follow-up: 12 months and 5 years	2> 1 for depression, anxiety, hostility, and obsessiveness at 5 years	
Scott, 2004	90 women with early stage breast or gynecological cancer and husbands	**1** Patient medical information education **2** Patient coping training for 6 sessions. Some sessions conducted by telephone. **3** Couple coping training for 5 sessions. Some sessions conducted by telephone.	3>2, 1 for couple coping, communication at post-intervention and 6 months	3>2, 1 for couple coping, communication at post-intervention and 6 months
			3>2, 1 for personal coping effort at 12 months	3>2, 1 for personal coping effort at 12 months
			3>2, 1 for psychological distress at post-intervention	
		Follow-up: Post-intervention, 6 months and 12 months	3>2, 1 and 1>2 for avoidance at post-intervention, 6 months, and 12 months	
			3>2, 1 for positive sexual self-schema, sexual intimacy, and partner acceptance at post-intervention, 6 months, and 12 months	
Thompson, 1990a & b	60 male post-myocardial infarction patients and wives	**1** Patient usual medical care **2** Couple in-hospital education and counseling for 4 sessions	At 3 days, 2> 1 for anxiety re: health and the future	At 3 days, 2>1 for anxiety re: sexual activity, relations with patient, ability of patient to work, and complications for patient
		Follow-up: 5 days and 1,3, and 6 months since MI. Anxiety subscales also assessed at 1, 2, and 3 days after MI.	At 5 days, 2> 1 for depressive symptoms; general anxiety symptoms; and anxiety re: health, ability to work, complications, leisure activity; and the future	At 5 days, 2>1 for general anxiety symptoms and all specific anxiety scales
			At 1 month, 2>1 for depressive symptoms; general anxiety symptoms; and anxiety re: another MI, complications, leisure activity, and the future	At 1 month, 2> 1 for general anxiety symptoms and all specific anxiety scales except for relations with patient
			At 3 months, 2> 1 for depressive symptoms; general anxiety symptoms; and anxiety re: ability to work, another MI, relations with spouse, and leisure activity	At 3 months, 2>1 for general anxiety symptoms and all specific anxiety scales except for relations with patient
			At 6 months, 2>1 for general anxiety and	At 6 months, 2>1 for general anxiety

First author (year)	Sample	Groups and follow-Up	Between-group differences for patients	Between-group differences for partners
			anxiety re: health, ability to work, another MI, relations with spouse, and leisure activity	symptoms and all specific anxiety scales except for complications for patient
Turner, 1990	57 chronic low back pain patients and spouses	**1** Patient usual medical care **2** Patient exercise for 8 sessions. Group format. **3** Patient exercise and couple behavior therapy for 8 sessions (5 sessions for spouses). Group format. **4** Couple behavior therapy for 8 sessions (5 sessions for spouses). Group format. Follow-up: Post-intervention, 6 months, and 12 months	3>2 for pain, pain behavior, and spouse report of sickness impact at post intervention	No outcomes were reported.
van Lankveld, 2004	60 rheumatoid arthritis patients and spouses	**1** Patient education and cognitive-behavioral skills training for 8 sessions. Group format. **2** Couple education and cognitive-behavioral skills training for 8 sessions. Group format. Follow-up: Post-intervention and 6 months	No significant differences between groups	Outcomes not described. Authors reported that spouses did not show improvement in any of the outcomes assessed.
Wadden, 1983	31 hypertension patients and spouses	**1** Patient education and relaxation therapy for 8 sessions **2** Couple education and relaxation therapy for 8 sessions Follow-up: 1 month and 5 months	2> 1 for number of in-home practice sessions of relaxation therapy and minutes of in-home practice sessions, at 1 month	No outcomes were reported.
Wing, 1991	49 obese Type 2 diabetes patients and overweight spouses	**1** Patient behavioral weight-loss program for 20 sessions. Group format. **2** Couple behavioral weight loss program for 20 sessions. Group format. Follow-up: Post-intervention, 12 months	1>2 for decreased calorie intake, and for weight loss in males, at post intervention 2> 1 for weight loss in females at post intervention	2>1 for weight loss at post intervention and 1 year, and for eating behaviors at post intervention 1>2 for patient support at 1 year

Table 3

Meta-analysis of patient outcomes

Outcome and comparison	*k*	Couple-oriented intervention (*n*)	Comparison group (*n*)	Effect size (*d*)	95% CI	H_W	Indirect estimate (95% CI)
Depressive symptoms							
Overall[a]	20	596	622	0.18**	0.07–0.27	1.10	
COI versus usual care	15	461	500	0.15*	0.02–0.27	1.13	0.04 (−0.26–0.18)
COI versus POI	10	269	259	0.19*	0.00–0.37	0.91	
Marital functioning							
Overall [a]	18	579	598	0.17**	0.06–0.27	0.95	
COI versus usual care	11	381	407	0.17*	0.03–0.31	0.76	0.01 (−0.20–0.22)
COI versus POI	11	312	308	0.16*	0.00–0.32	1.15	
Pain							
Overall [a]	14	448	444	0.19**	0.08–0.30	0.92	
COI versus usual care	11	384	360	0.20**	0.05–0.34	1.07	0.02 (−0.21–0.25)
COI versus POI	8	260	243	0.18*	0.00–0.35	0.73	

COI couple-oriented psychosocial/behavioral intervention, *POI* patient-oriented psychosocial/behavioral intervention, H_W heterogeneity of effect sizes within studies

*$p \leq 0.05$;

**$p \leq 0.01$

[a] *K* and *n* figures combined for each comparison group are more than the total for overall analyses because some studies included both comparison groups