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ARTICLE *in* PSYCHO-ONCOLOGY · DECEMBER 2004

Impact Factor: 2.44 · DOI: 10.1002/pon.832 · Source: PubMed

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PSYCHO-ONCOLOGY
Psycho-Oncology **13**: 837–849 (2004)
DOI: 10.1002/pon.832

INVITED REVIEW

EFFICACY AND MEDICAL COST OFFSET OF PSYCHOSOCIAL INTERVENTIONS IN CANCER CARE: MAKING THE CASE FOR ECONOMIC ANALYSES

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SUMMARY

The burden of cancer in the worldwide context continues to grow, as incidence and mortality increase each year. Regardless of where they live, a significant proportion of cancer patients at all stages of the disease trajectory will suffer social, emotional and psychological morbidity as a result of their diagnosis and treatment. Psychosocial interventions have proven efficacious in helping patients and families overcome many of the challenges that arise consequent to a cancer diagnosis. Addressing psychosocial needs is an essential aspect of any model of adequate cancer care, however it may also prove to be a cornerstone in efforts to extend the reach of cost-effective cancer treatment to meet the growing global need. In order to set the stage for discussion of economic issues, this paper first briefly reviews the literature detailing the extent of distress and the efficacy of psychosocial treatments for cancer patients. This is followed by a summary of terminology and costing concepts in the economic evaluation of psychosocial treatments, and a review of the literature on medical cost offset in mental health, other medical populations, and in cancer patients. The literature clearly supports the notion that psychosocial interventions are not only effective, but also economical. Conclusions support adding costing data into evaluations of the efficacy of psychosocial treatments in order to detail the often present but usually overlooked long-term cost savings that may be accrued to overburdened health-care systems.

INTRODUCTION

The worldwide burden of cancer is significant, and growing. In the year 2000, the most recent year with global data available, there were over ten million people newly diagnosed with cancer (excluding melanoma). Additionally, more than six million people died from the disease in that year alone (Ferlay *et al*., 2002). Although most psychosocial oncology research occurs in developed countries, there is clearly a need to consider the impact of psychosocial care on patients in less developed countries. In this paper we forward the argument that psychosocial care improves quality of life and can decrease the overall cost burden to the health care system. These are essential objectives in health care management in both developed and developing countries.

We will first consider the psychosocial impact of a cancer diagnosis and treatment on patients from an international perspective and follow this with a brief summary of the literature detailing the efficacy of psychosocial treatments for cancer patients. Next, costing concepts and measurement issues will be followed by a summary of the literature on medical cost offset, supporting the

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notion that psychosocial interventions are not only effective, but also economical. Recommendations regarding the importance of including costing estimates in psycho-oncology studies will conclude the paper.

DISTRESS LEVELS

Many studies have looked at distress levels, psychiatric symptoms and Quality of Life (QL) in cancer patients. Emotional distress refers to problems such as anxiety, depression and fears around the cancer experience, and has been defined by The National Comprehensive Cancer Network (NCCN) Distress Management Panel as:

> ...a multi-determined unpleasant emotional experience of a psychological (cognitive, behavioral, emotional), social, and/or spiritual nature that may interfere with the ability to cope effectively with cancer, its physical symptoms and its treatment. Distress extends along a continuum, ranging from common normal feelings of vulnerability, sadness and fears to problems that can become disabling, such as depression, anxiety, panic, social isolation, and spiritual crisis. (National Comprehensive Cancer Network, 2002)

QL, in contrast, encompasses a broader spectrum of issues, including physical, social, cognitive, spiritual, emotional and role functioning as well as psychological symptoms and symptoms such as pain, nausea and vomiting, and fatigue. The focus in this paper is primarily on prevalence and treatment of distress, but QL is a frequent outcome measured in studies of distress and psychosocial interventions and as such will be reported when appropriate.

It is well documented that emotional distress is common in cancer patients, with most studies detecting distress in the 35–45% range (Carlson and Bultz, 2003). Research has repeatedly revealed a high prevalence of psychiatric illness as well, in a variety of populations of cancer patients, which has been reviewed in several publications (Sellick and Crooks, 1999; Massie and Popkin, 1998; Noyes *et al*., 1998; Strain, 1998; Carlson and Bultz, 2003). Reported rates of depression in patients with cancer ranged widely from 1 to 53%, depending on the population of patients and the diagnostic criteria used (DeFlorio and Masie, 1995). Reviews conclude that he most commonly reported point prevalence rates of major depression are in the 20–25% range, increasing with higher levels of physical disability, advanced illness, and pain (Sellick *et al*., 1999). Adjustment disorder is also very common (Massie *et al*., 1998), with an average point prevalence across studies of about 25–30% (Sellick *et al*., 1999). A recent study targeting all patients visiting a large Canadian tertiary cancer centre over a period of four weeks assessed over 3000 cancer patients, and found that 37% met criteria for significant distress on the Brief Symptom Inventory (Carlson *et al*., 2004). A study of 386 patients from 12 American cancer centers found that the prevalence of psychological distress did not vary significantly across the disease continuum, with the exception of the terminal phase, which was characterized by more QL problems (Zabora *et al*., 1997). Overall, significant levels of distress were identified in 35% of the patients. A large study of 4496 patients found an overall prevalence rate of significant distress of 35.1%, with the greatest distress in lung cancer patients (43.4%), followed by brain, Hodgkin's disease, pancreas, lymphoma, liver, head and neck, breast, leukemia, melanoma, colon, prostate and finally gynecological (29.6%) cancers (Zabora *et al*., 2001).

From a broader international perspective, the problem of distress and depression is similar. A study of 508 Turkish cancer patients found that on a simple question that asked if they had felt distress severe enough to see a psychologist or a psychiatrist, 43.1% said 'yes', and a further 34.8% said 'partly' (Isikhan *et al*., 2001). That left only 22% of the population who indicated they had not experienced distress severe enough to consider seeking professional help. In a group of 100 Jordanian inpatients, distress levels using an Arabic version of the distress thermometer were measured, with 70% of patients scoring over cutoff of distress of 5 or greater (Khatib *et al*., 2004). This high level is consistent with other reports of higher distress levels in inpatient populations (Isikhan *et al*., 2001). In a French population of 561 consecutive patients, 35% scored over the Distress Thermometer cutoff of 4, which this group found to be the most sensitive cut point for their sample (Dolbeault *et al*., 2003). They also found that female gender, low social support, active treatment and more advanced disease were associated with greater distress. A similar validation study of patients from Italy, Spain, Portugal and Switzerland (Gil *et al*., 2003) found 5 or greater to be the most sensitive cut-point on the

Distress Thermometer, and reported similar rates of distress using this criteria.

In general primary care physicians and oncologists are likely to under-diagnose psychiatric distress in cancer patients (Katon *et al*., 1986), and often overlook QL assessment, frequently due to time pressures and clinical constraints (Morris *et al*., 1998). Studies of cancer patients' perceptions of needs find that they feel underserved in many areas including the provision of treatments for these high levels of psychological and emotional distress (Canadian Cancer Society National Patient Services Committee, 1992). It is clear, then, that substantial numbers of the people living with cancer suffer significant emotional and social hardship as a direct consequence of their illness. Fortunately, a great deal of work has gone into developing and researching programs designed to reduce the psychosocial distress experienced by patients and families. These programs are not only effective at alleviating distress, but emerging research shows that they are also cost-effective, saving the system money.

PSYCHOLOGICAL AND QL BENEFITS OF PSYCHOSOCIAL CARE

There has been a proliferation of research examining interventions designed to help people cope with cancer; from the time of initial biopsy, though diagnosis, treatment, adjustment post-treatment, metastatic disease or recurrence, through palliation and death. Outcomes generally assessed include: psychological functioning, primarily anxiety and depression, and overall quality of life. These interventions have been thoroughly reviewed several times over the past decade, and the curious reader would best be directed to one or more of these reviews for details (Andersen, 1992; Trijsburg *et al*., 1992; Cunningham, 1995; Fawzy *et al*., 1995; Meyer and Mark, 1995; Greer, 1995; Bottomley, 1996; Iacovino and Reesor, 1997; Bottomley, 1997; Fobair, 1997; Fawzy *et al*., 1998; Fawzy, 1999; Blake-Mortimer *et al*., 1999; Cunningham, 2000; Schneiderman *et al*., 2001). Most reviews have concluded that psychosocial interventions are often efficacious in decreasing distress and improving QL. In contrast, a recent thorough and methodologically rigorous review concluded that no strong recommendations and relatively few tentative recommendations could be made about the effectiveness of psychosocial interventions for cancer patients (Newell *et al*., 2002). The authors also gave concrete recommendations for designing more methodologically rigorous psychosocial oncology trials in future. In this context it is useful to consider that a lack of adequate evidence of efficacy does not constitute evidence of lack of efficacy. Objectively considered, research in psychosocial oncology strongly suggests the efficacy of targeted interventions but methodological rigor has been insufficient to reach unequivocal conclusions.

Interventions themselves usually assume one of four common forms: psychoeducation, cognitive-behavioral training (group or individual), group supportive therapy, and individual supportive therapy. As well, they are usually targeted to one of three points on the illness trajectory: diagnosis/pre-treatment, immediately post-treatment or during extended treatment (such as radiotherapy or chemotherapy), and disseminated disease or death (Schneiderman *et al*., 2001). Certain modalities of treatment have been shown to be more efficacious at one or more of these time periods. For example, psychoeducation may be most effective during the diagnosis/pre-treatment time period, when patient information needs are high. However, for later stage adjustment with more advanced disease, group support may be more effective (Blake-Mortimer *et al*., 1999), while cognitive-behavior techniques such as relaxation, stress management and cognitive coping may be most useful during extended treatments (Bottomley, 1997; Fawzy, 1995). Cunningham has identified a hierarchy of different types of therapy, based on increasingly active participation by the recipient. These five types are: providing information, emotional support, behavioral training in coping skills, psychotherapy, and finally spiritual/existential therapy (Cunningham, 1995). All of these five levels of therapy are supported by research demonstrating their efficacy, although the bulk of the research is in the area of supportive and cognitive-behavioral interventions.

Breast cancer patients have historically been the most common patient group studied (e.g. (Goodwin *et al*., 1996; Leszcz and Goodwin, 1998; Richardson *et al*., 1997; van der Pompe *et al*., 1997; Spiegel *et al*., 1989), although there is now ample research in other populations and mixed groups demonstrating therapeutic efficacy to confidently generalize outcomes beyond breast cancer. Some authors have repeatedly suggested that the evidence of the efficacy of psychosocial therapy is strong enough that it should be considered on the same footing as adjunctive medical therapies such as chemotherapy (Cunningham, 2000), particularly using brief, professionally led support groups with cognitive-behavioral training in active coping strategies. Cunningham suggests a model wherein every cancer patient receives at least minimal group adjunctive therapy as a routine part of cancer treatment. Some have suggested that the evidence is so compelling that there is no need to further test this proposition (Meyer *et al.*, 1995). In their meta-analysis of 45 randomized controlled trials in the area (14 in breast cancer, the remainder with other cancers or mixed groups), Meyer and Mark (Meyer *et al.*, 1995) found effect sizes on measures of emotional adjustment, functional adjustment, treatment and disease related symptoms, and global quality of life in the same range as psychotherapy in general, on par with other psychological interventions that are known to work. In percentage terms, the differential success rates for participants in intervention versus control conditions were 56% vs 44% for measures of emotional adjustment, and similar for the other outcomes. These effects are considered to be clinically significant for patients.

Many reviews have focussed on the efficacy of group interventions (Bottomley, 1997, 1996; Fobair, 1997; Blake-Mortimer *et al.*, 1999; Dobkin and Da Costa, 2000; Cunningham and Edmonds, 1996; Cunningham, 1995), and it seems to be the current trend to offer group, rather than individual, therapy. Group therapies have repeatedly been shown to be as effective, if not more effective, than individual treatment. Given the reduced cost of group therapies, and the greater number of patients who can be treated using this modality, it is not surprising that many researchers identify group therapy as the preferred route for treating distress in cancer patients. Several specific group therapy interventions have been standardized and proven efficacious using randomized controlled trials, for example, supportive expressive therapy for metastatic (Classen *et al.*, 2001) and early stage (Spiegel *et al.*, 1999) breast cancer, mindfulness-meditation based stress reduction for patients with many different types of cancer (Carlson *et al.*, 2001; Speca *et al.*, 2000), and standardized group psychoeducation for patients with any kind of cancer diagnoses (Cunningham and Tocco, 1989; Cunningham *et al.*, 1995; Cunningham *et al.*, 1991).

To summarize, interventions to treat distress and improve quality of life in cancer patients are widely available, highly effective, and standardized. Given the bulk of literature available detailing the efficacy of various types of interventions for patients at all points of the illness trajectory, it would seem unethical *not* to provide these services to cancer patients.

INTERVENTION GUIDELINES

Several agencies, both American and International, have developed guidelines for psychosocial care, based upon the intervention literature reviewed above. For example the National Comprehensive Cancer Network (NCCN) guidelines for the treatment of nausea and vomiting include self-hypnosis, progressive muscle relaxation, biofeedback, guided imagery, and systematic desensitization (http://www.nccn.org/physician_gls/index.html). The Canadian Association of Psychosocial Oncology has published a book of Standards which details principles of practice, professional issues, and organization and structure of psychosocial oncology programs (Canadian Association of Psychosocial Oncology, 1999). These have been endorsed by the Canadian Association of Provincial Cancer Agencies, the Canadian Cancer Society, the Canadian Strategy for Cancer Control, and the Canadian Council on Health Services Accreditation. NCCN and the American Society of Clinical Oncology (ASCO) also have guidelines regarding the treatment of physical symptoms such as pain and fatigue (http://www.asco.org/ac/1,1003,_12-002130,00.asp). Effective management of a wide variety of these types of physical symptoms contributes greatly to improving QL and ultimately decreasing psychosocial distress.

Unfortunately, the state of the science in terms of identifying psychosocial problems and developing practice guidelines has outpaced the capacity of the health care system to deliver services as optimally recommended. Psychosocial oncology departments continue to be understaffed and underfunded, while primary care staff are overburdened and often overlook psychosocial issues (Bultz, 2002). The result is that the proportion of patients who receive optimal psychosocial care is far from uniform. The health care system faces significant delivery challenges in the future and may have to broaden psychosocial delivery models, to include components such as larger group psychoeducation and computerized distress screening.

One issue that has been overshadowed by considerations of efficacy and needs to be taken into account when making formulating recommendations at a systemic level, is that of financial costs and benefits.

COSTING CONCEPTS

There are several different ways to assess the interface between care delivery and individual, societal and systemic costs as outcomes. Many authors have discussed these issues in significant depth. The curious reader is directed towards material outlined by Hargreaves *et al*. (1999) and Knapp and Healey in the book *Cost-Effectiveness of Psychotherapy*, edited by Miller and Magruder. Other sources that specifically discuss costing issues as they relate to psychological services are also useful resources (Hargreaves *et al*. (1998), Spiegel *et al*. (1999), Yates (1996)).

There are several techniques derived from theoretical conceptualizations of cost and benefits of psychological interventions in health care that are commonly used. The four most widely recognized are: (1) cost-minimization analysis; (2) cost-effectiveness analysis; (3) cost-utility analysis; and (4) cost–benefit analysis (Fleurence, 2003). A fifth approach, medical cost offset, will be discussed subsequently. The four costing analysis approaches, though similar, differ from one another in significant ways. Cost-minimization analysis compares the costs of different interventions that are known or assumed to have equal benefits. This makes sense in the context of comparing, for example, a generic drug to its branded counterpart, but may be more difficult to apply in the context of psychosocial interventions where equal benefits are more difficult to establish.

Cost-effectiveness analysis focuses on the ratio of monetary costs to measures of specific treatment outcome, or benefits, measured in natural units. For example, outcomes could be measured in terms of reduction in symptoms, improvements in quality of life or increases in work productivity. Cost-effectiveness analysis is particularly suitable for comparing treatment options. For example, it could be used to determine which of two treatment options with equal costs has the greatest benefits. However, because it uses natural units as outcomes, it is restricted to investigating only one domain of benefits at a time. This can be difficult as researchers are then forced to choose which outcome or benefit best represents the likely impact of the intervention.

Cost-utility analysis, in contrast, measures the impact of treatment in healthy years of life, to which a specific value has been assigned. Typically this metric is standardized in terms of quality-adjusted life years (QALY). The 'quality' or value assigned to each health state is known as the 'utility' of that state, as determined by an individual or society using a scale with anchors of zero (death) to one (perfect health). Hence, to determine the QALY of a treatment, the total number of life-years gained from the treatment is weighted by the quality of life in the resultant health state. As an example, a patient living in a health state assigned a utility value of 0.7, for a period of 10 years, would live the equivalent of 7.0 QALYs. One benefit of this type of analysis is that it can take into account multiple quality of life related outcome measures, in contrast to cost-effectiveness analysis which is limited to one chosen benefit.

Finally, in cost–benefit analysis, benefits are all measured in monetary terms. All costs and benefits are converted to monetary values and as a result can be directly compared and expressed as a cost: benefit ratio. If the benefits of a treatment exceed its costs, this indicates there is fiscal merit in implementing the treatment. It is easy to imagine the way in which societal benefits are translated into fiscal costs could be a contentious issue. Due to this problem of converting health benefits directly into monetary terms, cost-benefit analyses are rarely used in health economics.

The issue of how to estimate the societal cost of an illness or condition, and in addition the societal and individual benefits of treatment in monetary terms, is a significant problem. Several frameworks have been developed to consider the issues around what should be included as possible costs or consequences of medical illness and treatment. The usefulness of these approaches are dependent on the validity of the costing measures in terms of capturing the important elements that stem from the illness or condition accurately and fully. In general, this requires consideration of both direct and indirect costs, defined as the value of resources used and the value of resources lost.

Direct costs are those directly involved with the health care intervention. These can be divided into

(a) direct health care costs such as staff salaries, drug costs, test costs, treatment costs, costs stemming from the utilization of other health care system services, and other service costs such as use of nontraditional health care services or involvement with the criminal justice system, and (b) direct non-health care costs, such as transportation costs to receive treatment, time costs associated with waiting for treatment, administrative costs associated with the treatment, and capital costs associated with the value of the property in which treatment is provided. Indirect costs, in contrast, typically involve costs due to lost productivity as a result of the illness and/or treatment, absenteeism, underemployment, or unemployment which result from the condition itself and from possible early disability and death due to the condition. As would be imagined, indirect costs are notoriously difficult to fully estimate. Another category known as intangible costs includes the psychological costs of illness and treatment, such as pain and suffering. These costs are of considerable interest to psychosocial oncologists, but again, can be difficult to quantify and translate into monetary terms.

The final approach to estimate cost and which will be the main focus of the following literature review is known as medical cost offset. This refers to a situation where as a result of an intervention or an improvement in the effectiveness of an intervention, usual costs to the health care system may be reduced or averted. The most common example of a cost offset is when a condition that has been overlooked, misdiagnosed, or ineffectively treated is accurately recognized and treated. The obvious example in a psychosocial oncology context is the treatment of issues such as depression and anxiety, which may avert future health care costs downstream. More generally, although there are clearly direct costs associated with the treatment of cancer that are unavoidable, there may be cost savings as a result of decreases in utilization of other health care services (for example, discontinuation of unnecessary therapy or medication, reduced number of visits to a general practitioner or to emergency rooms). Additionally, if the cost savings resulting from psychosocial treatment are equal to or greater than the costs of adding in the treatment itself (e.g. paying for therapist salaries), such a result is called a total offset.

Indeed, there is considerable research indicating psychological interventions are commonly associated with both medical cost offset and even total cost offset, which will be summarized below. One can imagine such cost offsets may be due to multiple factors, such as maximizing patient resources in ways which may enhance response to health care treatments. Improved willingness and/or ability to adhere to medical advice and sometimes demanding treatment regimens such as medication prescriptions and diet and lifestyle recommendations may also result. Additionally, psychological interventions may help patients achieve better overall psychological and physical health, leading to a reduced need for health care services. Since people with anxiety are often high-utilizers of the health care system, frequently presenting with unexplained physical symptoms (Williams *et al*., 2001; Kolk *et al*., 2002), decreasing somatic anxiety may be another logical pathway to decreasing medically unnecessary physician visits. Finally, as a result of receiving treatment from a psychosocial specialist, visits to a general medical practitioner who was previously providing guidance or counseling may be curtailed.

MEDICAL COST OFFSET OF PSYCHOSOCIAL CARE

General mental distress

In terms of the societal burden of mental health issues, there is no question that mental health problems in general cost the medical system a great deal. A 1993 report estimated the cost of depression alone in the USA at $44 billion per year (Greenberg *et al*., 1993). The problem of depression is also significant in Canada as reflected in a $14 billion 1998 price tag cited in Hunsley (2002). Several seminal studies over the last 20 years have reported that patients with significant mood disturbance have increased rates of utilization of primary care medical services (Brown and Harris, 1978; Howland, 1993a; Weissman *et al*., 1981; Widmer and Cadoret, 1978). The same pattern of increased health care utilization has also been reported for conditions of milder depression and dysthymia (Katon *et al*., 1986; Howland, 1993b). Ninety-five percent of people who are suffering from a mental disorder seek treatment from a family physician (Lechnyr, 1993). These consumers are normally multi-users of care (Borgquist *et al*., 1993), which can comprise as much as 70%

of physicians' case loads and raise costs up to 250% (Lane, 1998). While 10–20% of patients presenting in a primary care setting have a diagnosable psychiatric disorder, upwards of 80% have evidence of significant psychological distress (Sobel, 2000). The physical discomfort resulting from psychological distress (such as headaches, sleep disturbance, and gastrointestinal symptoms) is one of the more common reasons people seek medical care. A 20-year study by Kaiser Permanente, a large Health Maintenance Organization (HMO) in the USA, found that 60% of all medical visits were by the 'worried well' with no diagnosable disorder (Cummings and VandenBos, 1981). A 1983 study of 20 000 participants indicated that patients' untreated mental illness resulted in increased medical utilization of 61%, versus an overall increase of only 9% for those without untreated mental illness over the same time period (Lane, 1998).

Not surprisingly, much of the research in the area of cost offset has been conducted by Health Maintenance Organizations and Managed Care Companies in the USA. These studies of many different populations have consistently found significant medical cost offset associated with treatment of psychological problems. For example, the Group Health Association found that patients in Kansas City receiving mental health interventions decreased their non-psychiatric usage by 30.7%. Their lab and X-ray costs also decreased by 29.8% (Lane, 1998). A Utah company saved $5.78 for every dollar spent on mental heath care with its weekly claims dropping 64% and with medical and surgical costs decreasing by 48.9% (Lechnyr, 1993). A Kaiser Permanente study indicated that patients who participated in psychotherapeutic interventions decreased their average length of hospital stay by 77.9%, had a 66.7% decrease in hospitalization frequency, a 47.1% decrease in physician office visits, a 45.3% decrease in emergency room visits, and a 4% decrease in the number of prescriptions received (Sobel, 2000). In a sample of 8100 participants, patients receiving psychotherapy for acute conditions decreased their medical utilization rate by 7.2% while patients with similar conditions who were not recipients of psychotherapy increased their utilization by 9.5% (Lane, 1998). Patients suffering from primarily mood or anxiety disorders randomly assigned to eight sessions of interpersonal psychotherapy used significantly fewer resources than a matched control group, with the extra cost of the psychotherapy sessions recouped within six months (Guthrie *et al.*, 1999). A Hawaiian study of high utilizers of care (approximately 80% of medical costs are generally accounted for by 20% of high-utilizing patients) randomly assigned patients to a special focussed mental health treatment that emphasized rapid alleviation of distress, or usual care. Over an 18-month period, the difference in medical costs between the two groups was 44%, with costs of the intervention offset within six months (Pallak *et al.*, 1994). Other studies demonstrate that psychological interventions can decrease costs from 18–31% (Lechnyr, 1993), and, tellingly, a meta-analysis of 58 early controlled studies of brief psychotherapy found decreases in healthcare utilization of 10–33% in 85% of the studies (Mumford *et al.*, 1984).

General medical illness

Health care seeking in patients with identified medical illness is a complex behavior that is influenced by psychosocial factors such as individual attitudes, perceptions, cultural norms and levels of psychosocial distress. Health seeking behavior as measured by health care utilization was correlated with levels of depression in patients with inflammatory bowel disease (de Boer *et al.*, 1998) and chronic pain (Jensen *et al.*, 1994). An important psychological component has been identified in the management of many medical conditions, including heart disease, arthritis, diabetes and asthma.

Although many of the studies cited in the above section included populations who had chronic or acute diseases, they were focussed more generally on overall caseloads (in the case of managed care companies), or patients who were identified by high levels of distress or psychological morbidity. Studies aimed at reducing costs using psychosocial interventions have also targeted patients presenting primarily with physical illness. A comprehensive meta-analysis of 91 medical cost offset studies in medical populations published between 1967 and 1997 concluded that 90% of the studies reported some degree of decreased medical utilization following psychological intervention (Chiles *et al.*, 1999). The estimated savings were $1,759 USD per person over all of these studies. The most effective interventions used behavioral medicine techniques (such as psychoeducation and coping skills) in surgical inpatient samples, such as patients undergoing heart surgery, hysterectomy, or hip fracture surgery. However, cost offset was also seen in outpatients, high medical utilizers, and mental health patients. Average savings resulting from psychological interventions were estimated at 20%.

A specific self-management program for arthritis sufferers found that participants reported a 19% reduction in pain, and a 43% decrease in physician visits. This translates to possible savings of $33.1 million USD, if only one percent of all arthritis suffers participated in the program (Lorig *et al*., 1993). One six-month randomized, controlled trial of 952 patients with heart disease, lung disease, stroke, or arthritis using the same Self-Management Program found that treatment subjects, when compared with control subjects, demonstrated improvements at 6 months in weekly minutes of exercise, frequency of cognitive symptom management, communication with physicians, self-reported health, health distress, fatigue, disability, and social/role activities limitations. They also had fewer hospitalizations and days in the hospital (Lorig *et al*., 1999). Similarly, in a chronic pain population health care utilization dropped significantly following participation in a multidisciplinary pain program, particularly in older patients (Middaugh *et al*., 1988). Another chronic pain program found a decrease in clinic visits of 36% following the intervention, representing savings of $320 per patient over the costs of the program (Caudill *et al*., 1991). A compelling study of people with heart disease randomized patients into one of three conditions: usual care, aerobic exercise 3x/week, or stress management. After 2–5 years, the incidence of further heart attacks, bypass surgery or angioplasty was 30% in usual care, 21% in exercise, and only 10% in the stress management group. This represented a 7:1 return on the cost of the stress management program in terms of costs saved (Blumenthal *et al*., 1997). A meta-analysis of randomized control trials of the addition of psychosocial treatment for coronary artery disease rehabilitation found reduced risk of mortality and recurrence of 70–84% over the first two years in patients randomized to psychosocial treatments, particularly behavioral management (Linden *et al*., 1996). The cumulative evidence of these and other studies paint an irrefutable picture of the fiscal benefits and reduced burden to the health care system resultant from the routine provision of comprehensive psychosocial care for medical patients.

Cancer

Very little research has been conducted to investigate the effects of psychosocial interventions on health care utilization specifically in cancer care. However, one Canadian paper reported a prospective, randomized study in which early stage breast cancer patients were randomly assigned to either a treatment or control condition (Simpson *et al*., 2001). The treatment group participated in 6 weekly cognitive-behavioral psychosocial meetings while the control group received usual care and the self-study materials from the intervention. All women were assessed on psychiatric symptoms, mood, depression and coping strategies at four time periods: pre-intervention, post-intervention, 1-year follow-up and 2-year follow-up. Alberta Health Care billing records were obtained covering a 2-year follow-up period to determine the amount billed per person over the course of the study in this universal one-payer system. Women who participated in the treatment group had less depression, less overall mood disturbance, better overall quality of life and fewer psychiatric symptoms beginning immediately post-intervention and at 2-years post-intervention compared to the control group. They also billed an average of $221 less than the women in the control condition, a 23.5% reduction in billing costs. The total amount saved in the treatment group of 28 women compared to the control group was $6199 over the course of the study. Billing over the two years was positively correlated with distress levels immediately post-intervention. The numbers of visits to the cancer centre were equivalent over the follow-up period.

These results were particularly significant because the participants in this program were not experiencing elevated levels of distress prior to their participation. Experience would suggest that if highly distressed patients were targeted (those who tend to be the highest utilizers of care), savings would likely be maximized. Indeed, when a median split was conducted on the billing data and the upper half of the treatment group was compared to the upper half of the control group, the average amount billed was $1079 in the treatment group, compared to $1546 in the control condition, a mean difference of $467 per person, more than twice that of the average savings. The cost of providing this intervention was minimal, with nine direct hours of patient contact per group (up to 10 patients), plus indirect time of approximately 30 minutes per patient. The cost for this time varies amongst professional groups, but using a value of $100/h results in a per-patient cost of $150 for the entire program (1.5 h/patient). Given that participants in the treatment group billed, on average, $221 dollars less than the control patients, this represents over $70 in total offset per patient ($317 total offset per patient on average for the top half of utilizers). This saving would be magnified if the intervention were provided, for example, by oncology social workers or psychologists instead of psychiatrists, and perhaps if the groups were targeted to more severely distressed patients.

One other Canadian study investigated 913 cancer patients who had been treated for cancer within the past two years, two-thirds of whom were women (Ashbury *et al*., 1998). Sixty-four percent of the women had breast cancer, and 40% of the men had prostate cancer. In those who reported mild, moderate or severe fatigue, the authors found increased health care utilization in terms of more visits to general practitioners, community or public health nurses, pharmacists, hospital emergency departments and walk-in clinics. Although no monetary cost was calculated in this study, clearly the untreated symptom of fatigue, which has psychosocial components, cost the system significantly in terms of increased healthcare utilization.

Another intriguing study randomly assigned men with prostate cancer to an experimental intervention group based on expressive emotional disclosure, or a treatment as usual control group (Rosenberg *et al*., 2002). The men in the treatment group underwent a task of written emotional disclosure about their cancer experience, following the Pennebaker paradigm which has shown beneficial psychological and physical health effects in healthy volunteers (Pennebaker, 2000, 1993). Health care utilization was measured by questionnaire and assessed medical contacts as well as use of medicines and health-related behaviors. The men in the treatment group showed improvements in the domains of physical symptoms, particularly pain, and had decreased health care utilization. Health care contacts decreased from 10 to 4.4 in the treatment group, while remaining stable at about 8 for the control group over a 6-month follow-up post-intervention (Rosenberg *et al*., 2002). No cost estimates associated with these changes were calculated.

Despite these few promising studies, there is a dearth of research investigating medical cost offset in cancer populations. With the growing dominance of the managed health care model in the USA, the increasingly tight funding of health care in Canada, and the recent push for privatization in many other countries, it is vital that psychosocial oncologists begin to evaluate their interventions not only in terms of efficacy of symptom reduction, but in economic terms as well. It is likely that the results seen in other medical populations will generalize to cancer, but the research to conclusively demonstrate this needs to be conducted.

Specific paradigms for studying medical cost offset in cancer research should evaluate not only health care utilization such as visits to medical professionals, but also assess the actual monetary costs of such professional services, including all costs to the overall system, as well as indirect costs. Rather than relying on self-reported utilization, records from insurance companies and other payers should be accessed. For example, there may be costs offset from other social services, in addition to medical costs. A patient with untreated distress may be unable to work and thus drawing workers' compensation or long-term disability insurance. In a one-payer system such as Canada or many European countries where the capital for these costs comes from the same pool of taxpayer funds as medical service, these additional societal costs could also conceivably be attenuated by timely treatment of cancer-related symptoms and distress. Other paradigms of cost-benefit and cost-utility analysis that take into account QL states and both direct and indirect societal costs (Hargreaves *et al*., 1999) are also useful models to apply to the psychosocial treatment of cancer patients. Due to the complexity of health economics analysis, we strongly recommend the addition of trained health economists to research teams studying these issues in the context of psychosocial oncology.

CONCLUSIONS

The research summarized in this paper clearly shows that psychosocial and emotional distress is a significant problem for one-third to one-half of all cancer patients, and that psychosocial interventions are helpful in alleviating distress levels in patients. Research in mental illness and within other medical populations shows large savings in medical billing through the treatment of emotional problems, including anxiety and depression, resulting in fewer visits to GPs and specialists alike. Although there is little extant research in psychosocial oncology, studies do support the general findings in other populations of fewer visits to primary care physicians after receiving efficacious psychosocial treatment. In the current climate of competing demands for limited resources, it behooves psychosocial oncology researchers to study not only the psychosocial efficacy of interventions, but also the associated health economics.

ACKNOWLEDGEMENTS

Portions of the text of this paper were submitted as a report commissioned by the Canadian Association of Psychosocial Oncology entitled *Psychosocial Oncology from a Canadian Perspective: Need, Effectiveness, Guidelines for Training, and Program Costs*, written by Dr Linda Carlson. Excerpts from a paper entitled *Efficacy* vs *cost of psychosocial interventions: An evidenced-based call for action* (Carlson and Bultz, 2002, Oncology Exchange, 1(2), 34–39,49) are also included with permission from the publisher. Dr Carlson is currently supported by a New Investigator Award from the Canadian Institutes of Health Research. We'd like to thank Dr Michael Speca for reviewing an earlier draft of this paper.

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