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Effect of Physician-Patient Communication on Patient Satisfaction,
Psychological Adjustment, and Adherence of Oncology Patients:
A Meta-Analysis of the Published Research

by

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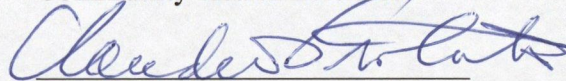
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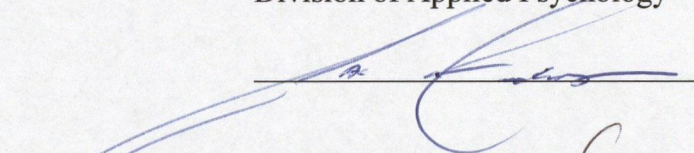
FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "Effect of Physician-Patient Communication on Patient Satisfaction, Psychological Adjustment, and Adherence of Oncology Patients: A Meta-Analysis of the Published Research", submitted by Victoria Terri Collin in partial fulfillment for the degree of Master of Science.

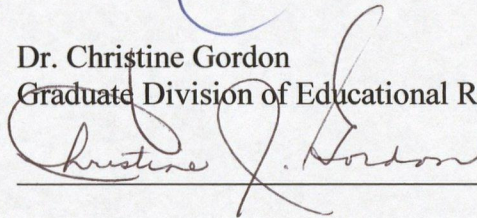
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ABSTRACT

Effective physician-patient communication is important in the treatment and management of patients with a cancer diagnosis. Communication may influence psychosocial and treatment-related outcomes, such as treatment and cancer-screening adherence, psychological states (i.e. anxiety and/or depression), adjustment to illness, and satisfaction with the physician and medical care. The magnitude of the impact of the physician-patient relationship (i.e. communication), patient care, and health outcomes, however, still needs to be clarified.

The present meta-analysis focused on data pertaining to the nature of communication within the physician-patient relationship as it related to promoting such social and clinical outcomes as satisfaction, psychological adjustment and adherence. There were 30 studies published in refereed journals with a total sample of 7, 801 patients included in the present study. There were 20 articles coded for patient satisfaction (54.1%), 9 articles for psychological adjustment (24.3%), and 8 articles for adherence (21.6%). The findings from this study indeed established that physician-patient communication had a positive moderate to high association for impacting satisfaction (unweighted $d = .87$, weighted $d = .52$), psychological adjustment (unweighted $d = .56$, weighted $d = .36$), and adherence (unweighted $d = .67$, weighted $d = .85$) in heterogeneous subgroups of oncology patients and patients pre-screened for cancer. Moderator variables analyses employing analysis of co-variance indicated that physician status (oncologist vs. general practitioner) and country of study (USA vs. others) moderated the magnitude of the effect size ($p < .05$) (unweighted and weighted) on patient

satisfaction. No other moderator variables (year of publication, disease status, education, type of cancer) affected effect sizes. .

These results emphasize the importance of physician-patient communication for positive health outcomes of oncology patients and those at risk for cancer. These findings are interpreted within a biopsychosocial model.

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There were many people that were involved throughout both the development and production of the present thesis. First and foremost I would like to extend my deepest thank-you and appreciation to Dr. Violato for defining mastery, being a model of virtue and, perpetually encouraging higher mindful activity. Dr. Violato has instilled in me beliefs and attitudes that have helped me grow as a professional and a person, and for that I am eternally grateful. Thanks!

I would also like to thank Ann Lawson and the research department at Woods Homes, Ms. Pilla, Dr. Michele Nanchoff-Glatt and others that have supported me throughout my schooling and career which has lead to where I am today. Thank-you to Dr. Jay Wunder for giving me the idea in the first place. Further, I would like to thank my wonderful mother, brother, and sister for always being my rocks of strength; I look at you guys and then I know that I have found the strength I need to move forward!

This thesis is more than just an academic paper, it is also a piece of work which was impacted by personal experiences and the drive to advance our understanding about medical research and how it can be used as a practical tool to meet the objectives of human medicine. At the very least I hope this thesis captures an interest in this area of research and, at the very most I hope it drives home the importance of what it means to provide care to patients suffering from the effects of a cancer diagnosis.

DEDICATION

This thesis is dedicated to the life and memory of my late grandfather Thomas Collin, who in even the worst of circumstances was an image of beauty. And, lastly this thesis is dedicated to the little boy who drove his red toy car through a waiting room at Princess Margaret hospital in innocent anticipation of his cancer treatment. You've touched more hearts and minds than you could ever imagine!

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CHAPTER ONE

Introduction

The incidence of specific cancers such as breast cancer, increased 52% from 1950 to 1990 and as a consequence mortality rose 4% (Roberts & Birch, 2001). Such data suggesting an alarming increase emphasize the importance of preventative, treatment, and maintenance interventions that support the biomedical and psychosocial needs of oncology patients, in attempts to lessen the affects of the disease on physical and psychological functionality.

Communication and the physician's associated interpersonal skills are increasingly becoming critical aspects of care within oncology medicine. Research has documented the importance of both medical and nonmedical aspects of patient care as essential for meeting health care outcomes. In one study (Wiggers, Donovan, Redman & Sanson-Fisher, 1990) employing 232 oncology patients', among the technical skills of the physician (i.e. correctness of treatment, physician competence), more than 98% of patients cited the importance of communication and psychosocial aspects of care such as the nature of information (i.e. quality), opportunities for mutual interaction (i.e. question asking), and physician understanding, as fundamental priorities of medical care. In another study (McWilliam, Brown & Stewart, 2000), researchers concluded that the strength of the physician-patient relationship heavily relied upon the communicative qualities of the physician. Indeed the relationship between the physician and patient which embodied both affective (e.g. support, reassurance, caring) and technical (i.e. information about diagnosis, illness) characteristics, not only strengthened the "working relationship", but also influenced the patients' experience with their illness, health care,

and control over the long terms effects of living with a chronic and unpredictable disease (McWilliam et al., 2000). In a similar view, Cassileth (2001) emphasized that the physician's communication skills have become a pronounced feature of medicine due to the increase in oncology patients and the recognition that multiple areas of a patient's life are affected by a cancer diagnosis, which include the psychosocial as well as the biological. Furthermore, changes in medical technologies (i.e. Cassileth, 2001) in the nature of health care and the nature of the physician-patient relationship have emphasized that competency in communication aspects are important in meeting the needs of patients. No longer is the physician-patient relationship seen as a set of simple and unrelated interactions, but rather it is seen as a more complex relationship which manifests itself in both the immediate as well as the long-term care of patients. These studies as well as others (Wiggers et al., 1990) emphasize that the "technical management" of disease is not the only concern at the forefront for treating patients with a chronic disease such as cancer. The relationship between the physician and patient and the care skills of the physician are also of central concern.

Terminology Used in the Present Study

In the present study, terminology with reference to medical and psychological fields are used to describe the process through which physicians and patients interact and the outcomes produced from the nature of the interaction. Several terms are utilized in the present study that describe this interaction: oncology (e.g. oncology patients), physician-patient communication, patient satisfaction, adherence, psychological adjustment, and psychosocial care. These terms are briefly defined in the following pages.

Oncology

Oncology is a specific field of medicine that involves caring for patients that have serious chronic illnesses, that require medical and psychological intervention. The present study focuses on two subtypes of patients: 1) those with heterogeneous cancers (e.g. gynecological cancers, brain cancer, lung cancer, gastrointestinal cancer, breast cancer, colorectal cancer), and 2) those at risk for cancer.

Physician-Patient Communication

Physician-patient communication is defined as the verbal exchange of information from the physician to the patient. The transfer of information extends across all stages of the illness trajectory, including diagnosis, pre-operative care, treatment, post-operative care, and rehabilitative phases. Communication is broadly conceptualized as “content, process, and perceptual skills” (Kurtz, Silverman & Draper, 1998). The “content” skills have to do with the “substance” of the physician’s exchange and receipt of information across varying medical transactions (Kurtz et al., 1998). The “process” skills refer to the nature of communication (e.g. verbal/nonverbal) and more specifically, how the physicians create a working relationship with their patients so as to deliver information (Kurtz et al., 1998). Finally, the “perceptual skills” are the interpersonal qualities of the physician such as attitudes, beliefs, and higher-order abilities such as reasoning skills important for communicating with patients (Kurtz et al., 1998). All of these levels of communication are integrated and create a context where effective interaction and communication can occur between the physician and patient throughout the medical relationship. More generally, communication can be summed up as “facilitating the link between the patient’s mental state and the physical experience of the illness” (p.10)

(Roter & Hall, 1993). Therefore, the purpose of effective communication is to provide a means to engage the patient within the medical encounter.

Patient Satisfaction

Patient satisfaction is defined as the patient's perception of the care received from the physician and medical team involved directly with their health. Satisfaction deals with the patient's evaluative sense that they are receiving quality care, which includes the technical (i.e. skills used in diagnosis, treatment, and management of disease) and interpersonal skills of the physician (Roter & Hall, 1993). Hall and Roter (1993) assert that the patient's accuracy of their perception of the interpersonal and technical qualities of the physician are fairly reliable descriptions of care, as patient's can report with much certainty on "the extent and nature of communication received from the physician" (p.133). A few examples of the questions that measure patient satisfaction include, "Were you satisfied with the information received by your doctor?"; "Were you satisfied with the answers provided by the doctor?"; "Were you satisfied with the quality of care received from today's interactions with the doctor?" (Hall & Roter, 1993). Such questions serve to probe the patient's understanding of the information and care they have received and what they think about what has been communicated to them from their physicians. As patient satisfaction appears to be a significant component to mediating the effects of other health outcomes such as, patient adherence, it is important that patients are satisfied with physicians and the medical process (Ong, Visser, Lammes & Haes, 1999).

Patient Adherence

Patient adherence is an important part in the treatment and management of patients with cancer, as it serves both a preventative and treatment function for illnesses

like cancer (Gritz, DiMatteo & Hays, 1989). Adherence in this present study encompasses the preventative aspects of care such as complying to screening regimens for cancer in individuals at risk for cancer. It also refers to the treatment aspects of patients diagnosed with cancer, such as following the treatment or medication regimens that are communicated by physicians. In particular reference to oncology patient's and those at risk for developing cancer, adherence is a central aspect of health not only because it is a part of the medical regimen, but also because it becomes a customary part of one's lifestyle. Following screening or treatment regimens are important for early detection of disease and for securing long-term survival. Roter and Hall (1993) state that patients will only fully appreciate the importance of adherence when physicians can effectively communicate their belief in the recommendations they make. Therefore, because of the chronic and unpredictable nature of cancer, patient adherence is crucial to health maintenance and survival.

Psychological Adjustment

The diagnosis and treatment of a serious illness like cancer can create serious negative implications for psychological health, and can put patients at risk for psychological morbidity. The most common psychological disturbances of cancer patients include anxiety, depression, adjustment disorders, and sexual dysfunctions (Maguire, 1985; Derogatis, Morrow, Fetting, Penman, Piasetsky, Schmale, Henrichs, Charles & Carnicke, 1983). One definition of psychological adjustment is the patient's adjustment to their illness as influenced by physician-patient communication and as assessed through anxiety and depression measures. Not only is there concern for the risk of psychiatric morbidity in oncology patients, but there is also concern regarding the low disclosure rate

of patient's reporting their symptoms to their physicians. In one study, less than 1 in four patients who developed a psychiatric state revealed their concerns to their physician (Comaroff & Maguire, 1981; Maguire, 1985). Maguire (1985) stated that these low patient disclosure rates and the high incidence of psychological morbidity represent many physician behaviours that force distance between the physician and the patient. These behaviours include avoidance of non-disease (i.e. mental health) issues, false or premature reassurance, failure to recognize patient's behavioural cues, and failure to obtain full and detailed information regarding physical and mental health (Maguire, 1985). Psychological adjustment is an important feature within the framework of chronic illness, because it has a significant influence on coping behaviour (Nail, 2001) and long-term adaptation.

Psychosocial Care

Psychosocial care extends beyond the disease itself and encompasses the social, emotional, and psychological components that surround the patient. The psychosocial aspects of cancer identify those phases patients move through on the disease continuum. These include the diagnostic phase, treatment phase, recurrence phase, and possible palliative phase (Weisman, 1979). Particularly during the critical stages of the disease such as the treatment stage, where the physician-patient relationship becomes an essential element, a breakdown in communication or lack of communication within the relationship can have severe consequences (Bakker, Fitch, Gray, Reed & Bennett, 2001). Such problems that can arise as a result of poor physician-patient communication are loss of information or misunderstanding of information which can create aversive health management consequences and can reduce patient trust in the health service (Bakker et

al., 2001). Some of the psychosocial issues emerging throughout each stage are coping behaviours, supportive networks (i.e. family, friends), familial role changes, psychological disturbance (e.g. depression, anxiety), social isolation, dependence, and so forth. Weisman (1979) as well as others (van der Kam, Banger, Bommel & Meyboom-de Jong, 1998; Glimelius, Birgegard, Hoffman, Kvale & Sjoden, 1995) asserted that the psychosocial phases and the psychological and social elements elicited at each stage of treatment, support the finding that cancer has ramifications and repercussions in aspects of life beyond the physical.

Statement of the Problem

There were two objectives of the present study. The first objective was to explore the research and the data as it related to physician-patient communication and its impact on physical and psychological health within an oncology field. The second objective of the study was to determine if effective physician-patient communication was important in affecting physical and psychosocial outcomes. This study sought to evaluate the impact of physician-patient communication on patient satisfaction, psychological adjustment, and adherence with oncology patients. Meta-analysis was employed to address the imperatives of the present thesis.

The physician's care and communication skills serve an important function within the physician-patient relationship because they affect patient behaviour on a number of different dimensions such as satisfaction, adjustment and coping to one's illness, and adherence (Ong, De Haes, Hoos & Lammes, 1995). Specifically, research draws on effective physician-patient communication as a salient theme throughout the application of clinical medicine, as an aspect of care that affects short-term and long-term wellness.

Studying variables related to health and adjustment are valuable because they give researchers direction and they outline the aspects vital to the conceptualization and measurement of key characteristics that determine health outcomes. Oncology medicine is of importance for the present study because it deals with persons with a disease bordered by many physical, social, and emotional connotations. Thus, this area requires the collaboration and interventive integration of a number of health-related fields.

Chapter II of this thesis contains the literature review and relevant theoretical underpinnings. The methods of the present study are described in Chapter III. The results are summarized in Chapter IV. The final chapter – Chapter V – contains a discussion of the results and limitations of the research and ends with a summary and conclusion of the findings.

CHAPTER TWO

Literature Review

Overview: Biomedical and Biopsychosocial Models

The treatment and management of cancer patients has shifted recently from a biomedical (**Figure 1**) approach to a more biopsychosocial (**Figure 2**) model of the illness. The biomedical model is a two-tier model depicting a hierarchical approach, whereby the physician moves through two primary stages: identification of the problem (i.e. diagnosis) and initiation of a solution within a physiological framework. It is a reductionist approach to medical care, reducing and partitioning aspects of the patient, and ignoring parts of the patient as essential to the whole of the solution (i.e. treatment, rehabilitation, remission). The biomedical model treats psychological and social aspects of the patients as derivatives or side effects of an organic state. This is a process that is heavily dependent upon the physician's technical skills and knowledge and little weight to the patient's perception or understanding of the problem.

The biopsychosocial (Engel, 1977; Smith & Strain, 2002) approach is an interactional model through which the patient and physician move collaboratively through a multiphasic illness process that incorporates all aspects of the patient (i.e. biology, psychological and the social environment). It is an approach which emphasizes the interdependence and the contribution of psychological, social, and biological aspects within which the patient experiences illness (Smith & Strain, 2002). This process is highly dependent upon the conjoined skills of the physician and patient that are articulated through verbal language (i.e. communication).

**Biomedical Model:
A Doctor-Centered Approach**

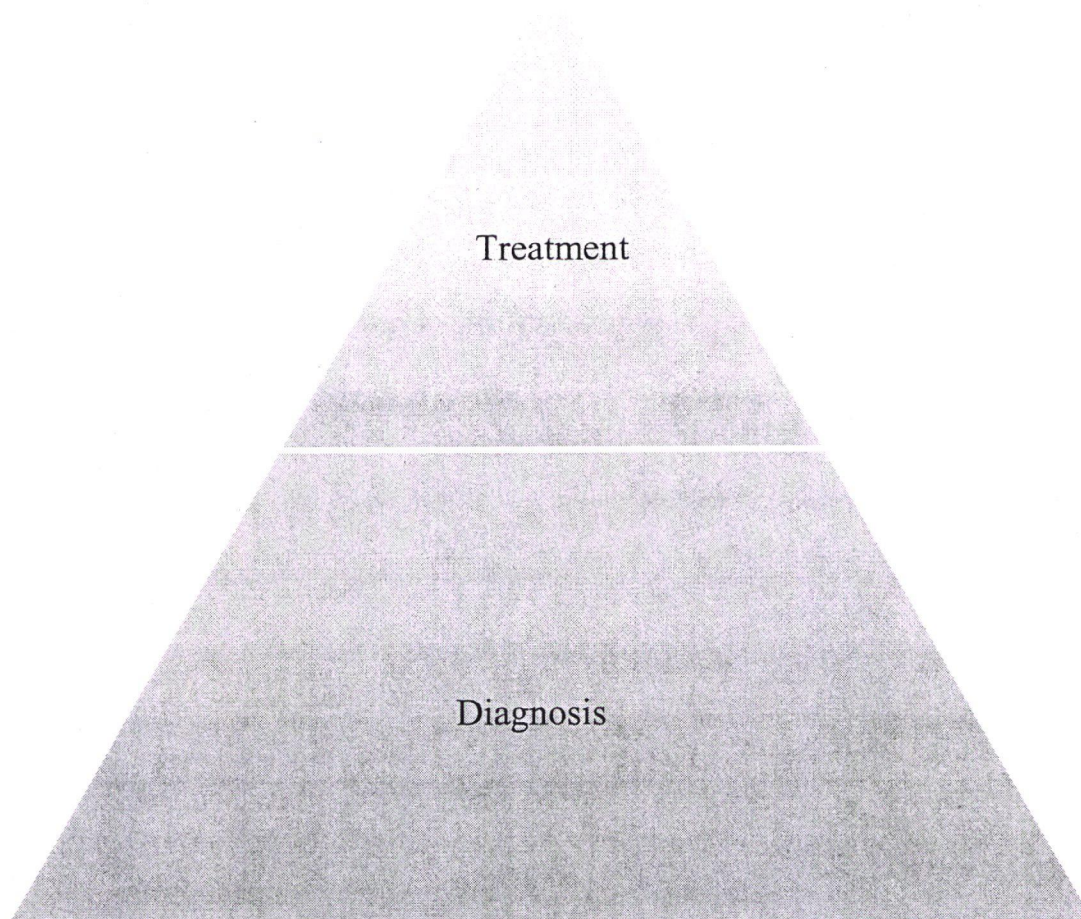


Figure. 1 – A two-tier model depicting the hierarchy involved within the biomedical model, whereby the physician moves through two primary stages: identification of the problem (i.e. diagnosis) and initiation of a solution within a physiological framework. The biomedical model is a reductionist approach to medical care, reducing and partitioning aspects of the patient, instead of viewing all of the parts of the patient as essential to the whole of the solution (i.e. treatment, rehabilitation, remission). This is a process that is heavily dependent upon the physician's technical skills and knowledge and little weight to the patient's perception or understanding of the problem.

**Biopsychosocial Model:
A Patient-Centered Approach**

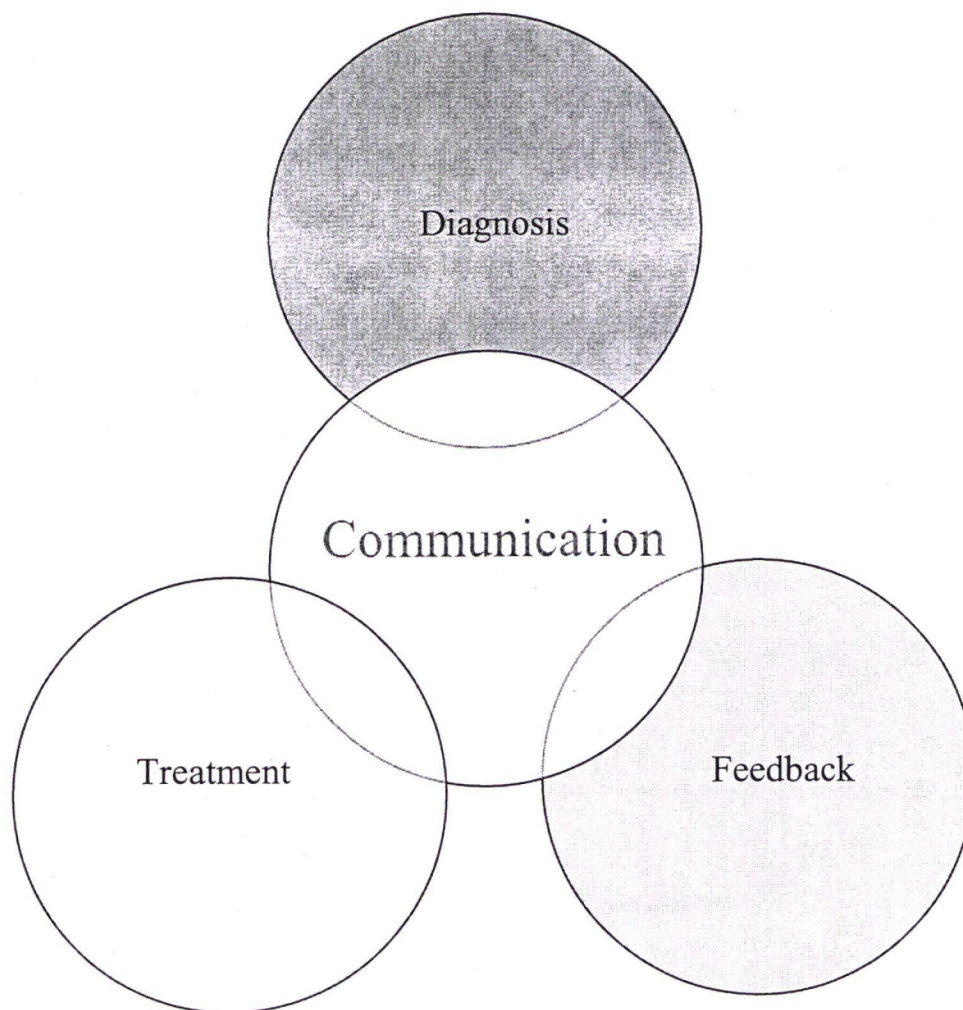


Figure. 2 – An interactional model through which the patient and physician move collaboratively through a multiphasic illness process, which incorporates all aspects of the patient (i.e. biology, psychological and the social environment). This process is highly dependent upon the conjoined skills of the physician and patient that are articulated through verbal (i.e. communication) language. Communication resides at the core of this framework and functions to gel all components within the model together.

Communication resides at the core of this framework and functions to gel all components of the model together. This model acknowledges the interaction of physiological, psychological, and social mechanisms, which function to influence health outcomes and maximize efficiency and quality of care across the illness trajectory. Within this biopsychosocial framework, there have been attempts to disentangle the mechanisms through which physicians can best incorporate science into the practice of human medicine, for the intended purpose of delivering effective medical care.

One of those mechanisms that has been studied (Stewart, 1995; Stewart, Brown, Boon, Galajda, Meredith, & Sangster, 1999; & Ley, 1982) is the impact physician-patient communication has on physiological and psychological health related outcomes. In a review concerning communication, findings indicated that effective physician-patient communication not only significantly influenced but also improved health outcomes in patients (Stewart, 1995). The specific outcomes that were discussed were emotional well-being, symptom resolution, functional and physiological (i.e. blood pressure) status and pain management (Stewart, 1995).

The relationship between doctor and patient appears to influence patient perceptions of how patients not only view the outcome of their visit with the doctor, but also how they critique the quality of the medical care system. In their study of women diagnosed with breast cancer, Burton and Parker (1994) found that expectations about the kind of care received, the adequacy of information, and the degree to which they were involved in their health process, were all direct antecedents of communication within the physician-patient relationship. From the aforementioned variables, the degree of patient involvement was critical in physician-patient exchanges. Patient-centered practice is a

fairly recent construct, but one which emphasizes the interactive role and the importance that patient involvement has in directing adequate and appropriate care (Bensing, Verhaak, van Dulmen & Visser, 2000; Roter, 2000; Ford, Fallowfield & Lewis, 1996). In fact, in a study conducted on patient-centered practice there was both a statistically and clinically significant association found between patient's perceptions of patient-centered communication (e.g. partnered communication between the physician and patient) and improved health outcomes, as well as, increased efficacy of care such that diagnostic tests and referrals were half as frequent (Stewart, Brown, Donner, McWhinney, Oates, Weston & Jordan, 2000). These findings not only demonstrate the importance of the patient's role on impacting health, but also reveals how the interaction and the relationship between the physician and patient may influence the patient's perceived control over health status.

Some care skills (i.e. communication) exercised by physician's across medical encounters are not only a complimentary function of diagnostic and technical skills, but are also essential components to meeting desirable patient and health objectives (Comstock, Hooper, Goodwin & Goodwin, 1982). One of the goals of a health professional requires the integration of a number of skills, and the recognition that no one skill can be completely isolated or is absolute when dealing with people in a clinical context. Therefore, a fluency in both technical and relational (i.e. interpersonal skills, communication) skills must be embedded into the practices of physicians, as the goal of managed care is to procure a successful balance between physical and mental health. This requires the development of meta-strategies by physicians when dealing with complex populations with sometimes ambiguous health and care needs. Conversely, the technical knowledge and skills of the physician also need to be emphasized, but there should be a

balance which allows a combination of skills to be used. This requires the use of a meta-cognitive operation, a more refined knowledge-based function which allows one the ability to discriminate between a myriad of skills and elect a specific set of skills in which to effectively execute.

Several studies (Fallowfield, Jenkins, Farewell, Saul, Duffy & Evans, 2002; Jensen, 1981; & Ong, De Haes, Hoos & Lammes, 1995) have emphasized the importance of communication skills in medical practice. Frequently, the requirement of technical skills (seen as compulsory) and more psychotherapeutic skills (viewed many times as optional), are seen as competing for time and memory rather than complimentary. Nonetheless, it is also clear from studies investigating physician communication, that the application of one skill cannot solely explain the total variance accounted for in health outcomes without the contribution of the other skill. Jensen (1981) stated that as medical technology advances teaching medical students the “human” side of medicine has been de-emphasized in a profession heavily weighted on human interaction. It is ironic that though both technical and care skills are necessary for successful clinical outcomes, only one set of those skills (i.e. technical) has advanced and dominated the field of medicine. Thus, while it is important for physicians to be competent technicians, they also need to utilize interpersonal skills required for the enhancement of patient-effective care. (Participants in the Bayer-Fetzer Conference on Physician Communication in Medical Education, 2001; White & Malik, 1999; Comstock et al., 1982).

Communication

Communication skills within a clinical context are fundamental and set the foundation for future interactions that have influence on outcomes such as patient

satisfaction (Loblaw, Bezjak & Buston, 1999; Ley, 1982 & Comstock et al., 1982), patient adherence/treatment adherence (Sapir, Catane, Kaufman, Isacson, Segal, Wein & Cherny, 2000; Squier, 1990; Ley, 1982 & Bartlett, et al., 1984), and psychological adjustment (Bakker et al., 2001; Roberts, Cox & Reintgen, 1994). Communication between patient and physician creates an environment that espouses the patient in decision-making and further encourages comprehension, satisfaction, and collaboration throughout the treatment process (Joos, Hickam, Gordon & Baker, 1996). Additionally, effective communication also impacts the degree of satisfaction experienced by the physician (Stewart, 1996). The number of interpersonal encounters during a physician's career can be very large. Fallowfield, Jenkins, Farewell, Saul, Duffy, and Eves (2002) stated that in a 40-year professional career, a hospital physician is involved in a approximately 150,000 to 200,000 interviews and interactions with patients and their families. This estimate not only illustrates the practical significance of the medical interview (Kurtz, Silverman & Draper, 1998), but also highlights the high volume of human contact present throughout the course of a physician's career. This underscores the important role adept interpersonal skills play in combating negative health outcomes for patients and negative feedback for physicians.

Although there are many definitions of communication, for the purposes of the present research, communication is broadly defined as the verbal transfer of information between physician and patient. Communication is further conceptualized as one factor that plays an important role in influencing patient's satisfaction, mental wellness (i.e. psychological adjustment), and adherence to treatment regimens and screening practices. The initial medical interview is the bedrock of the physician-patient relationship and

typically sets the tone for subsequent interactions (Frymoyer & Frymoyer, 2002).

Researchers describe communication building during the medical interview as serving three general purposes: 1) collecting information and information-giving, 2) developing and maintaining a therapeutic alliance and 3) guiding and negotiating prospective health plans with the patient (e.g. patient education) (Frymoyer & Frymoyer, 2002). The transfer of information between the physician and patient is essential not only for guiding the physicians' practices for treatment and disease management, but also for keeping the patient abreast as to how to regulate their health behaviour.

A number of considerations are central to the role of communication. First, some emphasize the trend in some patients that not only feel they have the right to know but want to know (finding effective ways to disseminate information that is suitable for the patient and for the specific context) about the details of their illness and its course (Reynold, Sanson-Fisher, Poole, Harker & Byrne, 1981). Second, the physician-patient relationship is central to treatment and rehabilitation as it is conceptually parallel to the therapeutic relationship shared between a therapist and his/her respective patient. Comparatively, these relationships require the same amount (and even more so for the doctor-patient relationship) of personal investment from both parties; moving the patient from the base of their distressed state toward the crest of their health, relative to the personal and medical parameters in which they do and can function. Third, good communication requires developing ways for negotiating health plans through means of patient education. Patient education is a critical function as it serves to help the patient understand the treatment and medical regimens offered to them in the context of their diagnosis. Berg (1987) stated that patient education is interposed into the basic dynamic

of the physician-patient relationship, and serves to create a context where learning can take form and knowledge can be obtained from both the physician and the patient. Indeed, the physician-patient relationship provides a mediating link for facilitating patient education (Berg, 1987). Conceptually, patient education is a support apparatus which functions to pad the effects of such behaviours such as, adherence, by informing patients about the importance of initiating behaviours that are congruent with medical regimens. Patients who are equipped with knowledge and understanding about the formalities of their condition and their options, are more likely to make informed decisions about their medical needs and also adds to the beneficial effects of preventative medicine for securing positive clinical results (Becker, 1985). Therefore, good communication achieved in the initial interview with patients is an intervention in and of itself, as it provides clarity and determines accuracy of patient stories, detects current or prospective difficulties, promotes a strong and efficient working relationship between physician and patient, and serves as a learning experience in which patients can be educated (Frymoyer & Frymoyer, 2002).

Three areas are affected by physician communication: 1) physiological outcomes (e.g. blood pressure, blood glucose levels), 2) social aspects (e.g. patient satisfaction, physician satisfaction), and 3) legal aspects (malpractice complaints or litigation) (Stewart et al., 1999). The most common communication problems concern patients feeling ignored, diagnosis and treatment options inadequately addressed, rushing patients, misunderstanding or not understanding the perspectives of patients and their families, and devaluing the patients' perspective (Hickson, Clayton, Entman, Miller, Githens, Whetten-Goldstein & Sloan, 1994). In an important study, Lerman et al (1993) found that the most

common reported communication difficulties as reported by oncology patients (n=114) are:

- 1) Difficulty expressing feelings to the physician (46.3%)
- 2) Desire on the part of the patient for more say/control in the decision-making or over the physician and medical team (45.3%)
- 3) Difficulty understanding what the physician is trying to communicate (49.5%)

In fact according to the 1978, 1995, and 1996 annual Complaints Committee reports, of all complaints reported to the College of Physicians and Surgeon's of Ontario (CPSO), poor or "inadequate" communication between physicians and their patients was the main underlying current for most problems the CPSO had to investigate (Annual Report of the Complaints Committee, 1997 in Stewart et al., 1999). Similarly, statistics from the Wales department of health revealed that 9.5% of complaints, stemmed from poor communication from physician to patient (i.e. inadequate information, lack of sensitivity) (Butow, 1995). These findings highlight the universality of the importance of physician-patient communication, and also address the issue that researchers and the medical field alike cannot equivocate the significant role physician's communication skills play in mediating the juncture between clinical aims and clinical resolutions.

Physician-patient communication is not merely a one sided transfer of ideas, but rather encompasses a myriad of both physician and patient characteristics that when put into combination either congeal or disunite. Loge, Kaasa and Hytton (1997) identified several factors that operate to influence the physician's communication presentation to oncology patients: 1) Work overload- perhaps not enough time to prepare or debrief (can lead to rushing of information); 2) Structured framework in which physician's practice-

little room for flexibility due to structural constraints; 3) Lack of communication skills or loss of certain skills. Some of the patient characteristics cited to conflict with physician-patient communication are aspects such as race, socio-economic status, and educational level (Bartlett, Grayson, Barker, Levine, Golden & Libber, 1984 & Ley, 1982).

Furthermore, certain patient populations are perceived by physicians as more challenging than others. These include dyads composed of husbands and wives, adolescents, and medically experienced individuals (Bennett, Knox & Morrison, 1978).

In terms of more challenging situational difficulties for physicians, consultations involving breaking bad news to patients with a cancer diagnosis or who are being diagnosed with a serious illness, drug dependencies, possible abuse of children, patients who refuse prescriptions, and a myriad of complex medical regimens, are viewed as problematic (Ptacek and Ptacek, 2001; Ray, Fischer, & Wisniewski, 1986; Ley, 1982; Bartlett et al., 1984). Clearly, working in an oncology setting initiates a host of complexities that are not only related to the genus of the disease but also to the abstract nature of patient and psychosocial characteristics (e.g. age, gender, educational level, family, etc.) (Allen, 1981; Amunziata, Foladore, Magri, Crivellari, Feltrin, Bidoli & Veronesi, 1998).

Communication by itself is an umbrella term that encompasses many sub-characteristics that have implications for patient health. A few of these sub-characteristics include physician attitudes (Levinson & Roter, 1995), physician understanding, physician empathy (Brock & Salinsky, 1993); and patient understanding. Physician attitudes are important components as they inevitably affect the patient's perception of care. More specifically, in a study on surgeon's attitudes toward patients with breast cancer, findings

revealed that though the surgeon's felt that professional competence, providing information, arriving at an accurate diagnosis, and providing reassurance were essential, only a few thought that discussing patient feelings about the diagnosis and about treatment options were a function of their role (Ray et al., 1986). Indeed Ray et al (1986) found that only 18% of surgeon's openly discussed cancer and 27% avoided the word cancer in their discussion with the patient about the diagnosis and its treatment (Ray et al., 1986). Conversely, in another study assessing physician attitudes and psychosocial needs of patients, findings revealed that physician's with more positive and open attitudes toward illiciting discussion of patient's psychosocial issues, promoted a more "collaborative" working relationship with their patient's (Levinson & Roter, 1995; Detmar, Aaronson, Wever, Mueller & Schormagel, 2000). Moreover, patients of physicians who were open to discussing other aspects of care other than biomedical issues, were more willing to share psychological and social concerns, were more satisfied with their care, and health outcomes were more likely to be positively influenced (Levinson & Roter, 1995) compared to patients of physicians who were less open to such discussions.

Empathy expressed by physicians seems to positively influence patient outcomes. Zinn (1993) stated that empathic responding from the physician can be time efficient, lead to a strong therapeutic alliance with the patient, and "facilitate" the relationship between the physician and the patient. It is apparent that physician attitudes and empathic response open the pathways to communication with patients and foster the reciprocal transfer of information needed to make proper diagnoses and treatment plans ensuring efficiency and quality care (Levinson & Roter, 1995).

Although information-giving is an essential part of the medical relationship it is not the only task within the communication protocol. Patient understanding is a subsidiary but significant component throughout medical exchanges. Ley (1982) reported that from patient self-reports between 7% to 53% of patients do not understand the communications from their doctors. This estimate increases from between 53% to 89% of patients misunderstanding of information when assessed via behavioural tests, such as following medical regimens (Ley, 1982). In another similar study, approximately half of the sample of oncology patients beginning the second round of their chemotherapy treatment were either unaware of, or “incorrectly” explained the specifics of their health status (Butow, 1995). Moreover, more than 15% of patients misunderstood the intended purpose and/or the outcomes of the effects of adjuvant therapy (i.e. chemotherapy) on their health outcome (Butow, 1995). Montgomery, Lydon and Llyod (1999) stated that perhaps the most problematic aspects within the delivery of information from the physician to the patient involves a “blanket policy” or “showering” patients with a “standardized way of communicating information” as opposed to tailoring information. This is most notably problematic, as if there is discomfort on the physician’s end of the communication spectrum and a lack of clear and comprehensive information delivery, there will most likely be reciprocating communication difficulty on the patient’s part.

Patient Satisfaction

Patient satisfaction is heavily contingent upon the patient’s perception on the pattern of care they receive from the physician (Frymoyer & Frymoyer, 2002). Specifically, aspects such as physician’s caring behaviours (e.g. courteous) and patient understanding (Comstock et al., 1982; Stewart et al., 1999; Ley, 1982)) are correlated

with patient's satisfaction during their medical interaction. Hulka (1979) viewed patient satisfaction as reflecting three main aspects: 1) professional competence of the physician, 2) personal characteristics of physician, and 3) costs and efficiency of medical care. It is apparent that both the technical skills and the interpersonal abilities of the physician are essential as separate attributes. However, it is also clear that the combination of the two perhaps, are more effective for determining the social aspects of medicine such as patient satisfaction. Patient satisfaction is not merely an independent factor but also has been cited to indirectly and directly affect other outcomes such as psychological adjustment and adherence (Stewart & Roter, 1989; Bartlett, Grayson, Barker, Levine, Golden & Libber, 1984). In one study, 1 in 5 patients who were not satisfied with the information communicated by the physician were more likely to be depressed or anxious (Jones, Pearson, McGregor, Gilmour, Atkinson, Barrett, Cawsey & McEwen, 1999):

Satisfaction among patients also plays a relational role within the delivery of continuity of care, across the illness trajectory and beyond. In a study conducted by Butow et al (1996) on continuity of care, results revealed that 41% of patients received information about treatment options by a different physician than from the physician who had discussed their diagnosis with them and 23% of patients who had been informed of their diagnosis by a specialist were discussing treatment with a different clinician (not necessarily a specialist). Results from Butow's et al. (1996) study emphasize that not only is continuity of care essential for tracking patient progress and patient management, but also for impacting patient satisfaction with the physician and medical team.

Arranged across the continuum of care patient satisfaction operates on both an individual and a systemic level. Steptoe et al (1991) found that "good" physician

communication was positively associated with satisfaction toward the physician (individual level) and satisfaction with medical care in general (systemic level) on the part of the patient. Wiggers et al (1990) state that there are several dimensions essential to influencing and securing patient satisfaction:

- 1) “the art”- interpersonal/care skills of physician
- 2) technical quality/skills of physician
- 3) accessibility (of services)
- 4) convenience (of services)
- 5) availability
- 6) financial aspects of care
- Other factors can also be added to this list such as: continuity of care,

adequacy of care, and efficiency of care.

Another important aspect of communication is the implication patient satisfaction has on adherence with medical regimens (Ley, 1982; & Frymoyer & Frymoyer, 2002). The theory seems to be that satisfied patients are more likely to comply to and to produce successful health related behaviours compared to dissatisfied patients (Ley, 1982). One of the possible explanations for this phenomenon is that satisfied patients have acquired an understanding of their condition and the options available, they have developed a good working relationship with their doctors, and they feel supported. Moreover, with all of the aforementioned components considered, the patient’s active engagement in complying with medical regimens is merely the next step to achieving healthy outcomes.

An influential theoretical approach to emerge from health research is the Health Belief Model (1982). The Health Belief Model explains the “adoption” of healthy

behaviours as embodying five main characteristics: 1) a prompt to acting, 2) perceived liability of health issue, 3) illness severity, 4) perceived understanding, and 5) advantages of the effectiveness of treatment and acting on the treatment (Ley, 1982). This model provides support for the idea that physicians who effectively communicate are instrumental in impacting their patients understanding of the condition, the importance in treating the condition, and the belief that they can change or improve their condition. Thus, the relative degrees to which the patients will comply with treatment-related regimens is context specific and skill laden.

Adherence

It has already been established that patient satisfaction is an important predictor of treatment and pre-screening adherence. Compliant behaviours are categorized under three major headings: “self-destructive behaviours”, failing to adhere to prescribed screening or treatment regimens, and avoiding preventative or “healthy” behaviours (Keller & White, 1997). Some of the other aspects that are integral to influencing adherence are transmission of information, mutual agreement and expectations set between patient and physician, patient is an active participant in their health plans, positive affect, empathy, understanding, and support displayed by the physician (Stewart, 1999). Conversely, components which seem to interfere with adherence are the length and complexity of the medical regimen, lack of patient support and lack of follow-up by physicians, dissatisfied patients, severity of illness, side-effects of treatment, treatment effect, and patient perceptions of the “consequences of their illness” (Ley, 1982; Stewart & Roter, 1989). However, underlying all of these necessary conditions for adherence is the notion that unless patients have a grounded understanding of their illness and of their options for

impacting their health, adherence will mostly not be followed or will be followed incorrectly.

It appears that the quality of the relationship between the physician and patient is a precursor for aspects of health and behaviour such as patient adherence. The degree to which the physician can express empathy in medical interactions and illicit a balance for obtaining both biomedical and psychosocial information not only gives the patient a “sense of validation” (Brock & Salinsky, 1993), but also helps the patient understand the importance of their behavioural participation in their health management. The greater extent to which the physician is invested and the ease with which they understand and formulate interventions around the patient and issues of treatment and/or prevention, the greater the chance patients will adhere and make decisions around “prevention” and treatment (White & Malik, 1999). For instance, DiMatteo (1995) explained that patient adherence to pharmacological intervention is a major factor in disease management. Non-adherence rates for long-term pharmacology use for chronic conditions, however is estimated to be 50% to 60%. These numbers are only one indicator that quality of life and disease control are compromised if communication between the physician and patient fail to emphasize the behavioural aspects of adherence essential for securing good outcomes.

Another role of physician-patient communication in patient adherence is the magnitude to which patients are equally involved in decisions that affect their health (White & Malik, 1999; Becjer, 1985). In other words, a partnered relationship where the patient is adequately informed about the nature of their illness and is encouraged to share their skills, increases compliant behaviours (White & Malik, 1999). White and Malik (1999) assert that although breast disease (cancer) is the leading cause of “cancer death”

in American women, with increased compliant behaviours such as routine mammograms and physical work-ups, the incidence of mortality would significantly decrease. This can only be achieved, however, if patients become part of the solution which is heavily dependent upon patient behaviour. White and Kemp (1997) indicated that patient behaviours are strongly linked to the health outcomes and long-term survival of patients with serious chronic disease. Given the seriousness and the extent to which healthy behaviours impact survival, the effectiveness of the physician's communicative skills are essential tools for augmenting the preventative and intervention methods which stimulate patient behavior and goals.

Psychological Adjustment

A cancer diagnosis creates a series of trauma enhanced responses which strive to physically and psychologically tax the normal ways in which humans might successfully attempt to conquer life challenges. Cancer is a disease that can challenge both the somatic (physiological) and psychological responses striving to maintain functionality and stability. Armistead, Klein, and Forehand (1995) stated that a diagnosis of cancer can create many "psychological, economic, and social" stressors that not only impact the patient but also disturb the environment in which they function. Some of the obstacles that patients with cancer face are uncertainty, loss of personal relationships/support, and social stigmas related to the disease (Maguire, 1985). Throughout the diagnosis, treatment, and rehabilitative phases of cancer, patients are at risk for psychiatric morbidity. Anxiety, depression, sexual dysfunction, and adjustment disorders are the most common psychological disturbances in patients with cancer (Takayama, Yamazaki & Katsumata, 2001). In one review study, approximately 1 in 4 patient's undergoing

surgery for breast or colorectal cancer, developed an anxiety or depressive psychiatric state (Maguire, 1985). In another related study, Montgomery, Lydon and Llyod (1999) found that 25% to 33% of patients with cancer developed a general anxiety disorder, major depression, or an adjustment disorder within 2 years of diagnosis. Simialrly, other researchers found that 45% of women diagnosed with breast cancer had also been diagnosed [by DSM-IV crtiteria] with a psychiatric disorder (i.e. depression, anxiety, adjustment disorder or post-traumatic stress disorder) (Kissane, Clarke, Ikin, Bloch, Smith, Vietta & McKenzie, 1998). Many patients with psychiatric like symptomology, however, go unrecognized by health professionals (Coaroff & Maguire, 1981). However, it is abundantly clear that the numbers in these studies not only illustrate the significant impact a cancer diagnosis has on the psychological functioning of oncology patients, but also highlight the importance of the physician's communication skills in adequately probing possibilities and recognizing clues that allow for proper diagnoses for psychological anomalies. Furthermore, these data may be due to low disclosure rates on the part of the patient and inadequate or a lack of interviewing skills on the part of physicians.

Maguire (1985) interviewed general physicians concerning factors that inhibited them from assessing psychological problems with their patients diagnosed with cancer and found the following to impede their communication abilities: 1) lack of knowledge about the specifics about cancer treatments (e.g. side effects), 2) uncomfortable hearing answers from patients that they were not ready to hear, 3) too much time taken up to go in-depth with patients, 4) hearing unpleasant comments about side effects of treatment

from patients that bias their belief/disbelief in the “effectiveness” of treatment, and 5) not knowing how to handle emotional responses from patients.

An aspect interfaced with adjustment is the patient’s satisfaction with the quality of the medical interaction. Butow (1995) found that later psychological adjustment to illness was correlated with patient’s satisfaction with their physician’s consultation around adjuvant treatment. Consequently, later adjustment to illness is one implication of the physician-patient relationship which provide support (Butow, 1995; Fallowfield, Hall, Maguire & Baum, 1990) for the idea that psychological adjustment may not be just a state encapsulated within a disease phase (i.e. diagnosis and/or treatment) but rather may be an enduring aspect which can be affected by physician-patient communication.

Population and Psychosocial Needs

Doctor-patient interaction is necessary in all types of medicine and patient populations; however it is of particular significance when dealing with individuals diagnosed with serious diseases such as cancer. As we have seen, the role of communication between physician and patient is important when interacting with oncology patients because throughout the cancer trajectory, the patients are dependent on the integration of the doctor’s technical skills, care skills, and clinical judgment (Morrow, Hoagland & Carpenter, 1983). Particularly, the oncology population is a unique subgroup among both chronic disease and general patient populations, due to the fact that their physical and mental health care needs are extremely “specialized, serious, and complex” (Butow, 1995). For these reasons oncology medicine is a specialized field because of the

variability of disease predictability and the low tolerance for avoidable medical omissions and errors which may prove lethal.

The manifestation of psychological disturbance in oncology patients is an extremely concerning issue among health professionals. For example, researchers found that 20% to 30% of women who underwent mastectomy for breast cancer, had severe psychosocial problems, that included issues around disfigurement, isolation, and so forth (Ray, Fisher & Wisniewski, 1986). The psychosocial issues affecting persons with cancer encapsulate all stages of the illness cycle, from diagnosis to the rehabilitative phase. With each stage of illness there may or may not be pivotal crisis factors (e.g. family break-up, social isolation) for which the patient has enough resources in which to protect against the negative consequences of the disease. Such resources include both the physical and psychological mechanics delivered and communicated through health care professionals, that protect the patient and combat aversive outcomes.

Remedies for Improving Communication between Physicians and Patients

There is some confusion over how to enhance the nature and the quality of communication between physicians and patients. One area of thought (Participants in the Bayer-Fetzer Conference on Physician-Patient Communication in Medical Education, 2001; Kurtz et al., 1998) is that of educating the patient as to how to better translate their concerns and expectations to their physicians, through way of learning what types of questions to ask the physician. One of the many problems with teaching the patient better ways for interacting with the physician is that oncology patients are over-burdened with trying to adjust to a number of other emotional and practical concerns, that do not include

teaching the physician interpersonal skills that the physician should already possess. In this approach it is emphasized that patients should take responsibility to control the quality of the interaction with their physician. Joos et al (1996) however, stated that direct teaching of communication skills to the physician is a better and more “efficient use of resources than multiple patient interventions”. In fact, physicians who have adept communicative abilities and who are able to effectively transmit their intentions to patients are more likely to diffuse noncompliant behaviour, decrease patient dissatisfaction, decrease the number of return visits from the patients relating to repetitive concerns (Gordon & Duffy, 2001), and increase the confidence in patients. Therefore, equipping physicians with adequate tools at the beginning of their educational career (i.e. medical school) as well as throughout their professional careers, not only increases their interpersonal aptitude but also encourages them to interact and become involved with their patients which lead to productive working relationships and favorable patient outcomes.

Summary and Conclusion

It is important to remember as medical practitioners, that morality comes into play whenever one attempts to achieve a clinical endpoint. Although science has an important job in discerning the medical options available to patients with cancer, the delivery (i.e. communication) of those options plays a critical role in effecting health, as it too is an important aspect of medical care. The physician has an obligation to fulfill the basic needs of their patients. These basic needs may be prerequisites for building healthy physician- patient relationships and for setting the stage for positive health behaviours for patients (Stewart et al., 2000). Evidence thus far as reviewed above, consistently reveals

that one of the basic needs of patients, specific to oncology, is the need for effective communication from the physician, and more particularly, the need to “know and understand” information (Ong et al., 1995).

From some of the findings revealed from the research, effective physician-patient communication has significant implications for educating and training medical professionals; benefits both patient and physician satisfaction; and, benefits health outcomes for patients. Effective physician-patient communication is shaped by the quality of information, the “content and complexity” (Ptacek & Ptacek, 2001) of information, and the mode through which the information is conferred. However, the point of contention between clinicians and researchers is coming to an agreement about how to deliver medicine that allows patients and physicians to meet their health objectives. This requires mutual collaboration from clinicians and researchers alike to develop evidenced-based frameworks that create best practices that enable physicians to not only deliver optimal care but be supported when delivering care. It also involves the health professional to step out of the restrictive role of “lab science” and become tuned into “human science” and cued into the realities and the needs of the patient populations they are servicing. The foregoing review suggests that communication between physician and patients is important in influencing patient satisfaction, psychological adjustment and adherence in oncology patients. Based on these conclusions, the following research questions were proposed.

Research Questions

Optimal care in oncology requires physicians’ effective communication with and attention to the psychosocial needs as well as the medical needs of the patient. Thus, the

basic question asked in the present study was “How important are such physician behaviours (i.e. communication) in patient outcomes?” In response to this question, a meta-analysis of the effectiveness of physician-patient communication on influencing health-related outcomes for patients with heterogeneous cancers and patients at risk for cancer was undertaken. Three research questions were posed in the present study:

- 1) Is there an impact of physician-patient communication on patient satisfaction?
- 2) Is there an impact of physician-patient communication on adherence to treatment or to pre-screening for cancer?
- 3) Is there an effect of physician-patient communication on patient psychological adjustment?

To address these research questions, a meta-analysis was conducted employing several specific independent, dependent and moderator variables.

Independent, Dependent and Moderator Variables

The specific variables under study in the current analyses were as follows 1) physician-patient communication was the independent variable, and 2) three dependent variables including patient satisfaction, adherence, and psychological adjustment. As well, there were 6 moderator variables included within the analysis. Moderators are variables that moderate the effects between the independent and dependent variables¹. The moderator variables in the present study were year of the publication of the study,

¹ For example, gender differences (Irish & Hall, 1995) and expression of empathic (Squier, 1990) understanding by the physician have been cited as variables which serve to moderate the effects between physician-patient communication and outcome behaviours such as treatment adherence

disease status (i.e. first diagnosis, recurrent, or metastatic), country of the study, physician status (i.e. general practitioner or oncologist), education level (i.e. secondary or post-secondary school), and type of cancer (i.e. heterogeneous or breast cancer).

The content within this meta-analysis is not focused on the style (i.e. expressive, emotional) of physician-patient communication, but rather on the nature of the outcomes and the magnitude of the relationship influenced by physician-patient communication. The motivation for this thesis therefore, arises from the attempt to quantify, identify, and begin to conceptualize a systematic framework for understanding the process through which and the role physician communication plays in eliciting positive health outcomes, compliant health behaviours, and effecting psychological wellness in patients with cancer.

CHAPTER THREE

Method

In 1976 Glass created a statistical method called meta-analysis (Petitti, 2000). A meta-analysis is a statistical procedure for systematically collating and computing the results from independent studies, in attempts to establish inferences about a specific area of study (Petitti, 2000). More specifically, this procedure combines independent studies that share the same subject focus. There are three main objectives of conducting a meta-analysis: 1) to establish an objective inspection of the data; 2) to determine an accurate calculation of the “treatment effect” (independent variable); and, 3) to explain heterogeneity between the results of the independent studies (Egger, Smith & Phillips, 1997).

Effect Size

As one of the main endeavors of a meta-analysis is to integrate the data across independent studies, an effect size is computed for each study statistic (Table 1). An effect size (d) is reported in a “standardized format” and functions to estimate the standard difference between study statistics between the studies (Egger et al., 1997). As it is assumed that studies in a meta-analysis, like samples recruited in experimental designs are randomly distributed around the mean, an effect size provides a standardized means (standard deviation) for linking the data (Egger et al., 1997; Petitti, 2000). Another aspect of computing effect size is the influence of study sample size. A means for controlling sample size differences is to calculate weighted effect sizes, as computed in the present analysis, to provide more weight (Egger et al., 1997) to studies with greater numbers of

Table 2
Formulae for Converting Study Statistics to Effect Size (d)*

Statistic to be Converted	Formula for Transformation
t	$d = \frac{2t}{\sqrt{df}}$
F	$d = \frac{2\sqrt{F}}{\sqrt{df(\text{error})}}$
r	$d = \frac{2r}{\sqrt{1-r^2}}$
X^2	$r = \sqrt{\frac{X^2}{n}}$
\bar{x}	$d = \frac{\bar{x}_e - \bar{x}_c}{S_c}$

*Adapted from Wolf (1986).

subjects, therefore increasing generalizability and decreasing chance estimates in the overall effect size.

Advantages and Disadvantages of Meta-analysis

There are many advantages (Rosenthal & DiMatteo, 2001) of a meta-analysis, a few of which include: obtaining an overall effect of the impact of the independent variable on the dependent variable(s), an “observational study of the evidence” in a specific domain (Egger et al., 1997), potential to see treatment differences between studies or maximize “comparability” (Petittie, 2000) between the studies in the analysis; and, the “statistical power of sub-group analysis” is enhanced due to the larger number of subjects across the studies (Bornetein & Bornstein, 1999; Hunter & Schmidt, 1990; Petitti, 2000). Conversely, there are also a few disadvantages of a meta-analysis that include choosing the studies to be included in the analysis is somewhat subjective, inclusion criteria and exclusion criteria may skew the potential outcomes or decrease the generalizability of the studies, and the robustness of the designs (i.e. correlational studies compared to randomized clinical trial studies) may compromise the analyses (Egger et al., 1997). For a more complete review of the advantages and disadvantages of meta-analyses see Rosenthal and DiMatteo (2001).

Literature Search

The literature search was conducted on published studies via the following sources: bibliographic searches employing reference lists, bibliographies and researcher recommendations of related research material, manual journal searches and, electronic citation searches (i.e. MEDLINE, PSYCHINFO, and CANCERLIT). The searches spanned across the periods of 1975 to 2002. The key words used throughout the searches

were: “neoplasms”, “physician-patient relations”, “physician-patient communication”, “cancer”, “patient satisfaction”, “patient /adherence/compliance”, “treatment compliance”, “psychological adjustment” and, “adaptation”. Unpublished data were limited and were not a part of the inclusion criteria, and were therefore excluded from the present analyses.

Inclusion Criteria

The inclusion criteria within the present study required that studies identified the independent variable and at least one of the dependent variables and were published in a refereed journal. Physician-patient communication was coded as the independent variable, defined as any form of verbal interaction between the physician and patient. This was defined as “communication” by the authors of the study and was treated as such by the coder. A total of 30 studies met the following inclusion criteria: 1) sample size greater than 20 subjects², 2) age of at least 16 years and older, 3) patients had to either have a heterogeneous or breast cancer diagnosis under the patient’s satisfaction and psychological adjustment variables, and 4) patients either had to have had a diagnosis of cancer or be screened for cancer.

Data Coding

The complete coding protocol is in Appendix A. The independent variable in the study was physician-patient communication. The dependent variables were patient satisfaction, adherence, and psychological adjustment. The study characteristics and

²A minimum of 20 subjects is typically required in research design to prevent decreased power

Table 2
Study Characteristics and Effect Size for the Three Domains for Each Study

Author	Yr	Size	Patient Satisfaction	Adherence	Psychological Adjust
Blanchard et al	1986	157	0.23		
Butow et al	1996	144	0.43		0.43
Centeno-Cortes et al	1994	97	0.76		
Cornbleet et al	2002	80	1.2		
D'Angelica et al	1998	48	2.96		
Derdiarian	1989	60	0.63		
Fox et al	1994	972		0.22	
Fox et al	1991	963		0.24	
Gattellari et al	2001	233	0.49		0.23
Giveon et al	2000	125		0.49	
Jones et al	1999	525	0.23		
Kelly et al	1992	333		0.27	
Leighl et al	2001	101	1.28		0.7
Lerman et al	1993	97			0.85
Liang et al	2002	613	0.2		
Loge et al	1996	497	1.19		
MacDowell et al	2000	675		2.2	
Mager et al	2002	60	1.18		0.72
Mickey et al	1997	685		0.93	
Montgomery et al	1998	100	0.38		0.38
Myers et al	1990	322		0.48	
Oberst	1983	20	1.04		-0.32
Risberg et al	1997	180	1.39		
Sardell et al	1993	56			1.54
Simmons et al	2001	158		0.54	
Steptoe et al	1991	77	0.56		0.53
Takayama et al	2001	147	1.63		
Velikova et al	2002	28	0.67		
Yoder et al	1997	37	0.54		
Yu et al	2001	211	0.48		

respective effect sizes for the three dependent variables are reported in Table 2. The patient satisfaction variable included measures such as patient satisfaction self-report questionnaires, checklists, and structured interviews. Adherence included measures such as cancer screening behaviours, self-report questionnaires, and structured interviews. Lastly, measures of psychological adjustment consisted of anxiety and depression measurement tools, self-report assessments, and interviews.

There were eight independent study characteristics coded in the study which consisted of year of publication, disease status, country of study, physician status, age categories of patients, education level, cancer type, and gender. A summary of the descriptive coding results are reported in Table 3. As well, six moderator variables were added to the analyses and include year of publication of study, disease status, country of study, physician status, education level, and type of cancer. A summary of the moderators and their effects on the effect sizes are reported in Table 6.

The effect sizes calculated for each of the three dependent variables were obtained from t and F ratios, correlations and Chi-square, standard methods for computing effect sizes (Cohen, 1988) (refer to Table 2). As well, percentages were computed from a table of transformations of percentages to correlations (refer to Table 5).

Quality of Study

A five point scale was employed in order to develop a quantitative measure of the quality of the studies. A score of 5 on the scale indicated an excellent study, and a score of 1 indicated a poor study. The criteria used to measure the quality of the studies were as follows: 1) clear conceptualization and operationalization of key terms pertinent to the present study, 2) clearly stated hypotheses, 3) sampling techniques employed to recruit

the studies (e.g. randomized compared to convenience sample) and, 4) measuring tools used to examine the variables (e.g. psychometrically sound instruments compared to interview formats). The intention was to include quality of study as a co-variate in the moderator analysis.

Table 3
Descriptive Characteristics of the Studies in the Sample

Variable	N	Percent
1. Year of Publication		
1983 - 1991	6	20
1992 - 2000	15	50
2001 - 2002	9	30
Total	30	100
2. Disease Status		
First Diagnosis	0	0
Recurrent	2	6.7
Metastatic	2	6.7
Unknown	26	86.7
Total	30	100
3. Country of the Study		
USA	15	40.5
Australia	3	18.9
Asia (China & Japan)	2	5.4
Norway	2	5.4
Spain	1	2.7
Isreal	1	2.7
UK	6	16.2
Total	30	100
4. Physician Status		
General Practitioner	6	20
Oncologist	11	36.7
Unknown	13	43.3
Total	30	100
5. Age Categories of Patients		
≤ 54	8	26.7
≥ 55	16	53.3
Unknown	6	20
Total	30	100
6. Education		
Secondary	1	3.3
Post Secondary	2	6.7
Both	8	26.7
Unknown	19	63.3
Total	30	100

7. Cancer Type		
Heterogeneous	9	30
Breast	3	10
Both	11	36.7
Pre-Screening	7	23.3
Total	30	100
8. Gender		
Male Only	1	3.3
Female Only	7	23.3
Both	21	70
Unknown	1	3.3
Total	30	100
9. Quality of Study		
One	0	0
Two	0	0
Three	10	33.3
Four	15	50
Five	5	16.7
Total	30	100

Table 6

Analysis of Variance and Covariance^a of Moderator Variables on the Effect Sizes in Three Domains with Mean Age as Covariate

Moderator Variables	Unweighted			Weighted		
	Patient Satisfaction	Adherence	Adjustment	Patient Satisfaction	Adherence	Adjustment
1. Year of Publication	0.410 ^c	0.388 ^c	1.40 ^c	1.56 ^c	2.08 ^c	0.366 ^c
2. Disease Status	b	b	b	b	b	b
3. Country of Study	4.135* ^c	1.609 ^c	0.128 ^c	9.426* ^c	0.859 ^c	0.04 ^c
4. Physician Status	4.453* ^c	0.64 ^c	1.101 ^c	3.819* ^c	0.898 ^c	1.098 ^c
5. Education	b	b	b	b	b	b
6. Type of Cancer	0.198 ^c	3.907 ^c	1.869 ^c	0.809 ^c	3.83 ^c	1.129 ^c

* P<.05

a = co-variate (quality of study)

b = too few cases for meaningful analysis

c = F-ratio

Table 5
Equivalents of d

d	Proportion of Separation	r
0	0.0%	.000
.1	7.7	.050
.2	14.7	.100
.3	21.3	.148
.4	27.4	.196
.5	33.0	.243
.6	38.2	.287
.7	43.0	.330
.8	47.4	.371
.9	51.6	.410
1.0	55.4	.447
1.1	58.9	.482
1.2	62.2	.514
1.3	65.3	.545
1.4	68.1	.573
1.5	70.7	.600
1.6	73.1	.625
1.7	75.4	.648
1.8	77.4	.669
1.9	79.4	.689
2.0	81.1	.707
2.2	84.3	.740
2.4	87.0	.768
2.6	89.3	.793
2.8	91.2	.814
3.0	92.8	.832
3.2	94.2	.848
3.4	95.3	.862
3.6	96.3	.874
3.8	97.0	.885
4.0	97.7	.894

CHAPTER FOUR

Results

The results computed for the present study are presented in 4 sections: 1) study characteristics and effect sizes, 2) descriptive characteristics across the studies, 3) unweighted and weighted effect sizes, and 4) analysis of covariance of moderator variables on effect sizes.

Descriptive Statistics for Study Variables

There were 30 studies analyzed with a total sample of 7,801 patients (refer to Table 2). The minimum number of subjects in a study was 20 and the maximum number was 972. There were 20 articles coded for patient satisfaction (54.1%), 9 articles for psychological adjustment (24.3%), and 8 articles for adherence (21.6%). Dates of the studies ranged from 1983 to 2000. The published studies were largely by American researchers ($n = 15$, 40.5%) with the remainder spread across the UK, Australia, Norway, Spain, Israel, and Asia (Table 3 provides an outline for the descriptive results of the studies).

The detailed features included gender, age (i.e. ≤ 54 and ≥ 55), educational level, physician status (i.e. general practitioner or oncologist), type of cancer (i.e. heterogeneous or breast cancer), and disease status (i.e. first diagnosis, recurrent, or metastatic) (Table 3). Most studies sampled both men and women ($n = 21$, 56.8%), the majority of which were older (≥ 55) ($n = 16$, 53.3%) compared to younger (≤ 54) ($n = 8$, 26.7%). Almost one third of the total sample had both a high school and a post-secondary education ($n = 8$, 26.7%). Physicians were classified as either primary care (i.e. general practitioners) or oncology physicians, of which one-third were oncologists ($n = 11$, 36.7%).

Unfortunately, much of the disease status of the sampled populations ($n = 26$, 86.7%) was not known, however recurrent ($n = 2$, 6.7%) and metastatic ($n = 2$, 6.7%) were equally represented.

Effect Size Analysis

Unweighted and weighted effect sizes and 95% confidence intervals were computed across all three dependent variables (i.e. patient satisfaction, adherence, and psychological adjustment) and are reported in Table 4.

The unweighted effect size across the three domains (patient satisfaction, adherence, and psychological adjustment) ranged from a minimum value of .56 (psychological adjustment) to a maximum value of .87 (patient satisfaction). The positive effect sizes across the three domains indicate that physician-patient communication positively influences social, psychological, and health-related outcomes. The overall mean effect sizes symbolized by d , for each domain are based on small to medium sized samples of patients (patient satisfaction $n = 3,415$; psychological adjustment $n = 888$; adherence $n = 4,233$).

Studies almost always differ from each other in many methodological and substantive ways (Shadish & Haddock, 1994). In attempts to take these differences into account, it was necessary to employ an appropriate procedure that would justify the combination of the 30 studies analyzed in this meta-analysis. Appropriate weights by sample size were calculated to minimize the variance. Such weighting assumes that studies with larger samples have a smaller variance and in turn are more precise estimates of the population effect size. Shadish and Haddock (1994) termed this a quality rating, which is the only standard weighting scale for studies to date. It was this quality-weighted

Table 4

Unweighted and Weighted Effect Size (d) in the Three Domains

	N	N	Unweighted Effect Size (ES)			Weighted Effect Size (ES)				
			Mean	95% C. I.		Mean	95% C.I.		%Separation	
			<u>d</u>	Lower	upper	<u>d</u>	lower	upper		
Patient Satisfaction	20	3415	0.87	0.57	1.18	50%	0.52	0.34	0.71	35%
Adherence	8	4233	0.65	0.17	1.13	41%	0.85	0.12	1.19	49%
Psychological Adjustment	9	888	0.56	0.18	0.95	36%	0.36	0.15	0.46	21%

version that was used to compute the weighted average effect size and is a standard approach in meta-analyses (e.g. Rosenthal & DiMatteo, 2001). The weighted effect sizes and the 95% confidence intervals are presented in tabular form in Table 4. The weighted effect sizes for patient satisfaction, adherence, and psychological adjustment were .52, .85, and .36, respectively. Both the effect sizes for patient satisfaction and psychological adjustment decreased; however adherence increased. This pattern of decreasing mean effect sizes is typical when weighting effect sizes as this provides a narrow confidence interval. This weighting is considered to provide a better estimate of the population effect size than does the unweighted effect size. Moreover it is thought to provide a more precise value than its unweighted counterpart.

To further expand the interpretation of the unweighted and weighted effect size results, percent of separation values are presented in Table 4. The unweighted percentage of separation results revealed the following: a mean effect of .87 for patient satisfaction indicates that: 1) 50% of patients will be positively influenced and have higher satisfaction as a function of physician-patient communication, 2) a mean effect of .67 shows that there is greater adherence in 44% of patients due to physician-patient communication, and 3) a mean effect of .56 for psychological adjustment suggests that 36% of patient's psychological adaptation to their illness will be positively influenced as a function of physician-patient communication (refer to Table 4). The largest ($d = .87$) effect size across the three domains was patient satisfaction, suggesting that physician-patient communication impacts 50% of social outcomes, such as satisfaction in oncology patients. The smallest ($d = .56$) was psychological adjustment, suggesting that a little over

one third of oncology patients have improved adjustment to their illness as a function of the physician-patient relationship, specifically the communication aspect.

Analysis of Moderator Variables

The influence of moderator variables is of significant interest in meta-analyses, as it serves to examine whether there are other variables that moderate the effect sizes obtained from the interaction of the independent and dependent variables. Specifically concerning the impact of physician-patient communication and health outcomes, a few variables have been cited to moderate the effects of communication and outcomes such as age of patients, cultural background of patients, sex of patients, sex of physician, marital status, education level, and socio-economic background of patient (Ong et al., 1995; Irish & Hall, 1995). In the present study, a univariate analysis of covariance (ANCOVA) was conducted on the moderator (i.e. year of publication, disease status, country of study, physician status, education, and type of cancer) variables to test their potential influence on the effect sizes (d) across the three domains (i.e. patient satisfaction, adherence, and psychological adjustment) (refer to Table 6). Quality of study was employed as the covariate since it may influence the effect size (Shadish & Haddock, 1994). That is, rigorous studies (i.e. high statistical power- Cohen, 1988) produce better estimates of population parameters. Table 6 contains a summary of the results of the ANCOVA analysis for unweighted and weighted effect sizes for each of the three domains.

Results revealed that out of the 6 moderator variables, 2 were significant at the $p < .05$ level. Specifically, physician status and country of study were significant. Physician status was shown to moderate the unweighted and weighted effects between physician-patient communication and patient satisfaction (F for unweighted $d = 4.453$, $p < .05$; F for

weighted $d = 4.278$, $p < .04$). As well, the moderated relationship between country of study and patient satisfaction for unweighted and weighted d was shown to be significant (F for unweighted $d = 4.137$, $p < .05$; F for weighted $d = 9.426$, $p < .00$). The present analyses indicate that, except for the impact of physician status and country of study, the remainder of the moderator variables had no significant influence on moderating d across the three domains.

CHAPTER FIVE

Discussion

The main findings from the present study are: 1) there were moderate to high effect sizes (unweighted and weighted) noted across all three domains, 2) physician-patient communication positively affected patient satisfaction, adherence, and psychological adjustment, 3) no other moderators except for physician status and country of study were observed to significantly moderate the effects of both unweighted and weighted d for patient satisfaction with quality of study as a covariate.

The results found in this analysis are congruent with previous studies (e.g. Stewart, 1995; Allen, 1981; Ong et al., 1995) of physician-patient communication providing further clarity for the degree to which physician-patient communication influences social outcomes (i.e. patient satisfaction), adherence behaviours (i.e. treatment and screening behaviours), and psychological adjustment (i.e. anxiety and/or depression) in subgroups of oncology patients.

A mean effect (weighted) of .52 for patient satisfaction is suggestive of two primary explanations: 1) patients are highly satisfied with the communication from their physicians, and 2) physician-patient communication is important for influencing patients' perception of their satisfaction with care received. However, there are precautions to the above set of statements. The cautions are that there may be social desirability (Bredart, Razavi, Goodman, Farvacques & Van Heer, 1998) effects from patient reports of perceived care; there may be ceiling effects (Bredart et al, 1998), as patients may not have

another point of reference for which to compare their care; the study designs for which to assess patient care are many times overwhelmed by convenience samples as opposed to randomized samples; the psychometric measures used to assess patient satisfaction are many times sampled with general populations of patients (which might not be appropriate to the unique concerns and needs of oncology patients), as such non-specific questions relating to patient care may not be applicable to patients with cancer; and lastly, the measurement tools assessing patient satisfaction include both the technical and interpersonal skills of the physician, skills which are both essential but abundantly distinct in their delivery and use. For these reasons, patient satisfaction is a construct that needs more refined definition and more narrowed measurement.

A mean effect (weighted) of .85 was found between physician-patient communication and adherence. This effect explains the degree to which physician-patient communication promotes preventative intervention in the form of pre-screening behaviours in patients at risk for cancer and also treatment intervention, in the form of supporting oncology patients to follow medical regimens. These compliant behaviours are illustrative of the importance that the medical relationship between the physician and the patient have in facilitating positive healthy behaviours that lead to successful patient outcomes and enhancing quality of life.

A mean effect (weighted) of .36 was derived between physician-patient communication and psychological adjustment. This result indicates that physician's communicative abilities are important for influencing both short-term and long-term adaptation of illness in patients with cancer. As well, this finding supports the literature

regarding the role physician's play in psychological adjustment and the extent to which patients cope to the immediate and long range aversive side effects of their disease.

Results from the analysis also revealed significant moderating associations between physician status and country of study and patient satisfaction, with quality of study as a covariate. These significant findings are suggestive of two basic interpretations: 1) the relative difference in expertise and knowledge of oncology vs. primary care physicians (as seen in their differential status) may play a role in how and what information is communicated to the patient, the nature of the communication, and thus impact how the patient behaviourally and psychologically reacts to the communication process and the medical relationship, and 2) country of study impacts the relationship between physician-patient communication and patient satisfaction due to the fact that countries preferences for methodological and study design features, differences in the distribution and regulation of health care, patient characteristic disparities, and differences in health care priorities and concerns may function to impact research agendas and thus influence research findings.

Theory and Findings

Korsch (1968) and later Ley (1982) were two of the pioneering researchers to break ground and attempt to link a relationship between the instrumental and affective components within the physician-patient relationship and patient and health outcomes (Ong, Visser, Lammes & de Haes, 2000). Their theories of the physician-patient relationship and its influence over health outcomes and the health status of patients were further supported by the biopsychosocial model postulated by Engel (1977). The

biopsychosocial model allowed for a divergence from biomedicine and biological explanation of disease and encompassed the patient's psychology and social world as further aspects important not only in the possible causality of illness but in clarifying a pathway for how patients experienced their illness. Outcomes of effective communication include reduction in maladjusted psychological states (e.g. depression and anxiety) (McWilliam, Brown & Stewart, 2000), satisfaction and congruence with patient expectations (Bredart et al., 1998), and adherent health related practices (i.e. treatment regimens) and behaviour (i.e. cancer screening).

Communication is an important practical (McWilliam et al, 2000) aspect of the physician-patient relationship. The present meta-analysis confirms that both nonmedical (e.g. interpersonal skills, communication) and medical (e.g. technical skill of physician) variables are integral functions of patient care and for procuring successful health outcomes (Wiggers et al., 1990) within a biopsychosocial framework. Wiggers et al (1990) emphasized that providing quality care to oncology patients goes beyond the biomedical nature of the disease and its treatment and rather extends toward "acknowledging" the psychosocial parameters of the patient. Furthermore, the objectives of the medical relationship do not only define the components of care that are needed to move the patient from a disease state to a healthy state but also promote a dual partnership (Participants in the Bayer-Fetzer Conference on Physician-Patient Communication in Medical Education, 2001) between the physician and patient for which responsiveness to optimal care can be attained.

Limitations

There are three major limitations to the present meta-analysis. The first limitation was that all of the studies included in the quantitative analysis were only papers that had been published in refereed journals. It is recognized that restricting the design to include only published studies may have reduced the variability within the defined dependent variables and skewed the findings. Conversely, studies published in refereed journals are known to have undergone the rigors of the peer reviewed process whereas unpublished studies generally have not. A second limitation was that generally speaking, many of the studies in the analysis had sample sizes that were small. Problems with small sample size include limited generalizability of findings to relate back to the defined population of interest, reduced variability, and possible overwhelming impact of confounding variables not accounted for which may or may not influence the relationship between the stated independent and dependent variable(s). Lastly, missing data on the moderator variables in the present study limited the amount of information to obtain on possible moderating effects influencing the association between physician-patient communication and patient satisfaction, adherence and psychological adjustment.

Summary and Conclusion

The transfer of information and the nature of the medical interaction not only provide benefit for the patient but provide a source of benefit for the physician as well, as it promotes an affective and instrumental communicative fluency between physician-patient expectations, needs, and goals. Throughout the semantic structure vis-à-vis the implication of physician communication on patient health (literature review), several

themes emerged in the literature. These include: needs assessment of the target population, access to quality care based on needs, finding language to communicate intentions, objectives, risks and outcomes, tailoring communication to reduce adverse psychological, social, and physiological sequelae, and tracking or proper follow-up with patients (also known as continuity of care). These recurring issues provide further support for the importance of the medical relationship, particularly the communication aspect, in facilitating and effecting patient health and outcomes.

A common belief in modern medicine and now substantiated by the present thesis is that the conjoined utilization of both technical and interpersonal skills (i.e. communication) of the physician is most effective for enhancing social, psychological and behavioural patient health outcomes. Accordingly, it is important that physicians have developed an interpersonal skill set that allows them to create strong medical alliances with their patients. In the contemporary practice of oncology, physicians are overwhelmed by patients with this chronic illness for which no definite medical or treatment resolution is available. Thus, chronic illness such as cancer demand long-term medical and psychological management and rely on the physician-patient relationship to support and reinforce behaviours and psychological states that are congruent with healthful outcomes.

References

* References with astrix are employed in the meta-analysis.

- Annunziata, M.A., Foladore, S., Magri, M.D., Crivellari, D., Feltrin, A., Bidolo, E. & Veronesi, A. (1998). Does the information level of cancer patients correlate with quality of life? A prospective study. *Tumori*, 84, 619-623.
- Bartlett, E.E., Grayson, M., Barker, R., Levine, D.M., Golden, A. & Libber, S. (1984). The effects of physician communications skills on patient satisfaction, recall, and adherence. *Journal of Chronic Diseases*, 755-764.
- Bakker, D.A., Fitch, M.I., Gray, R., Reed, E. & Bennett J. (2001). Patient-health care provider communication during chemotherapy treatment: the perspectives of women with breast cancer. *Patient Education and Counseling*, 43, 61-71.
- *Blanchard, C.G., Ruckdeschel, J.C., Fletcher, B.A. & Blanchard, E.B. (1983). The impact of oncologists' behaviors on patient satisfaction with mourning rounds. *Cancer*, 58, 387-393.
- Becker, M.H. (2000). Patient adherence to prescribed therapies. *Medical Care*, 23, 539-555.
- Bensing, J.M., Verhaak, P.F.M., van Dulmen A.M. & Visser, A.P.H. (2000). Communication: the royal pathway to patient-centered medicine. *Patient Education and Counseling*, 39, 1-3.
- Bredart, A., Razavi, D., Delvaux, N., Goodman, V., Farvacques, C. & Van Heer, C. (1998). A comprehensive assessment of satisfaction with care for cancer patients. *Support Care Cancer*, 6, 518-523.
- Brock, C.D. & Salinsky, J.V. (1993). Empathy: An essential skill for understanding the physician-patient relationship in clinical practice. *Family Medicine*, 25, 245- 248.
- Burton, M.V. & Parker, R.W. (1994). Satisfaction of breast cancer patients with their medical and psychological care. *Journal of Psychosocial Oncology*, 12 (1/2), 41-63.
- Butow, P.N., Dunn, S.M., Tattersall, M.H.N. (1995). Communication with cancer patients: Does it matter? *Journal of Palliative Care*, 11(4), 34-38.
- *Butow, P.N., Kazemi, J.N., Beeney, L.J., Griffin, A.M., Dunn, S.M. & Tattersall, M.H.N. (1996). When the diagnosis is cancer- patient communication experiences and preferences. *Cancer*, 77, 2630-2637.

- Cassileth, B.R. (2001). Enhancing doctor-patient communication. *Journal of Clinical Oncology*, 19 (18), 61-63.
- *Centos-Cortes, C. (1994). Questioning diagnosis disclosure in terminal cancer patients: a prospective study evaluating patients' responses. *Palliative Medicine*, 8, 39-44.
- Cohen, J. (1988). *Statistical analysis in the biomedical sciences*. New York: Academic Press.
- Comaroff, J. & Maguire, P. (1981). Ambiguity and the search for meaning: childhood leukemia in the modern clinical context. *Social Science Medicine*, 15B, 115-123.
- *Cornbleet, M.A. (2002). Patient-held records in cancer and palliative care: a randomized, prospective trial. *Palliative Medicine*, 16, 205-212.
- *D'Angelica, M., Hirsch, K., Ross, H., Passik, S. & Brennan, M.F. (1989). Surgeon-patient communication in the treatment of pancreatic cancer. *Archives of Surgery*, 133, 962-966.
- *Derdiarian, A.K. (1989). Effects of information on recently diagnosed cancer patients' and spouses' satisfaction with care. *Cancer Nursing*, 12(5), 285-292.
- Derogatis, L.R., Morrow, G.R., Fetting, J., Penman, D., Piasetsky, M.A., Schmale, A.M., Henrichs, M., Charles, L.M. & Carnicke, M.A. (1983). The prevalence of psychiatric disorders among cancer patients. *Journal of the American Medical Association*, 249(6), 751-757.
- DiMatteo, M.R. (1995). Patient adherence to pharmacotherapy: the importance of effective communication. *Formulary*, 30(10), 596-603.
- Egger, M., Smith, G.D. & Phillips, A.N. (1997). Meta-analysis-Principles and procedures. *British Medical Journal*, 315, 1371-1374.
- Engel, G.L. (1977). The need for a new medical model: a challenge for biomedicine. *Science*, 196, 129-136.
- Fallowfield, L.J., Jenkins, V.A., Farewell, V., Saul, J., Duffy, A. & Eves, R. (2002). Efficacy of a cancer research UK communications skills training model for oncologists: a randomized controlled trial. *Lancet*, 359, 650-656.
- *Fox, S.A., Siu, A.L. & Stein, J.A. (1994). The importance of physician communication on breast cancer screening of older women. *Archives of Internal Medicine*, 154, 2058-2068.

- *Fox, S.A. & Stein, J.A. (1991). The effect of physician-patient communication on mammography utilization by different ethnic groups. *Medical Care*, 29(11), 1065-1082.
- *Gatteralri, M., Butow, P.N. & Tattersall, M.H.N. (2001). Sharing decisions in cancer care. *Social Science & Medicine*, 52, 1865-1878.
- Giveon, S. & Kahan, E. (2000). Patient adherence to family practitioners' recommendations for breast cancer screening: a historical cohort study. *Family Practice*, 17(1), 42- 45.
- Glimelius, B., Birgegard, G., Hoffman, K., Kvale, G. & Sjorden, P.W. (1995). Information to and communication with cancer patients: improvements and psychosocial correlates in a comprehensive care program for patients and their relatives. *Patient Education and Counseling*, 25, 171-182.
- Gordon, G.H. & Duffy, F.D. (2001). Educating and enlisting patients. *Journal of Clinical Outcomes Management*, Special edition, 11-16.
- Gritz, E.R., DiMatteo, M.R. & Hays, R.D. (1989). Methodological issues in adherence to cancer control regimens. *Preventive Medicine*, 18, 711-720.
- Irish, J.T. & Hall, J.A. (1995). Interruptive patterns in medical visits: the effects of role, status and gender. *Social Science Medicine*, 41(6), 873-881.
- *Jones, R., Pearson, J., McGregor, S., Gilmour, W.H., Atkinson, J.A., Barrett, A., Cawsey, A.J. & McEwen, J. (1999). Cross sectional survey of patients' satisfaction with information about cancer. *British Medical Journal*, 319, 1247-1248.
- Joos, S.K., Hickam, D.H., Gordon, G.H. & Baker, L.H. (1996). Effects of a physician communication intervention on patient care outcomes. *Journal of General Internal Medicine*, 11, 147-155.
- Keller, V.F. & White, M.K. (1997). Choices and changes: a new model for influencing patient health behavior. *Journal of Clinical Outcomes Management*, 4(6), 33-36.
- *Kelly, R.B. & Shank, C. (1992). Adherence to screening flexible sigmoidoscopy in asymptomatic patients. *Medical Care*, 30(11), 1029-1042.
- Kissane, D.W., Clarke, D.M., Ikin, J., Bloch, S., Smith, G.C., Vietta, L. & McKenzie, D.P. (1998). Psychological morbidity and quality of life in Australian women with early-stage breast cancer: a cross-sectional survey. *Medical Journal of Australia*, 169, 192-196.

- Korsch, B.M., Gozzi, E.K. & Francis, V. (1968). Gaps in doctor-patient communication: Doctor-patient interaction and patient satisfaction. *Pediatrics*, 42, 855-871.
- Kurtz, S., Silverman, J. & Draper, J. (1998). Teaching and learning communication skills in medicine. Oxon (UK): Radcliff Medical Press, 4-31.
- *Leighl, N., Gatellari, M., Butow, P., Brown, R. & Tattersall, M.H.N. (2001). Discussing adjuvant cancer therapy. *Journal of Clinical Oncology*, 19(6), 1768-1778.
- *Lerman, C., Daly, M., Walsh, W.P., Resch, N., Seay, J., Barsevick, A., Birenbaum, L., Heggan, T. & Martin, G. (1993). Communication between patients with breast cancer and health care providers. *Cancer*, 72, 2612-2620.
- Levinson, W. & Roter, D. (1995). Physicians' psychosocial beliefs correlate with their patient communication skills. *Journal of General Internal Medicine*, 10, 375-379.
- Ley, P. (1982). Satisfaction, compliance, and communication. *British Journal of Clinical Psychology*, 21, 241-254.
- *Liang, W., Burnett, C.B., Rowland, J.H., Merapol, N.J., Eggert, L., Hwang, Y.H., Silliman, R.A., Weeks, J.C. & Mandelblatt, J.S. (2002). Communication between physicians and older women with localized breast cancer: implications for treatment and patient satisfaction. *Journal of Clinical Oncology*, 20(4), 1008-1016.
- Loblaw, D.A., Bezjak, A. & Bunston, T. (1999). Development and testing of a visit-specific patient satisfaction questionnaire: The Princess Margaret Hospital Satisfaction with Doctor Questionnaire. *Journal of Clinical Oncology*, 17(6), 1931-1938.
- *Loge, J.H., Kaasa, S. & Hytten, K. (1997). Disclosing the cancer diagnosis: the patients' experiences. *European Journal of Cancer*, 33(6), 878-882.
- *MacDowell, N.M., Nitz-Weiss, M. & Short, A. (2000). The role of physician communication in improving compliance with mammography screening among women ages 50-79 in a commercial HMO. *Managed Care Quarterly*, 8(4), 11-19.
- *Mager, W.M. & Andrykowski, M.A. (2002). Communication in the cancer "bad news" consultation: patient perceptions and psychological adjustment. *Psycho-Oncology*, 11, 35-46.
- Maguire, P. (1985). Improving the detection of psychiatric problems in cancer patients. *Social Science Medicine*, 20(8), 819-823.

- McWilliam, C.L., Brown, J.B. & Stewart, M. (2000). Breast cancer patients' experiences of patient-doctor communication: a working relationship. *Patient Education and Counseling*, 39, 191-204.
- *Mickey, R.M., Vezina, J.L., Wordon, J.K. & Warner, S.L. (1997). Breast screening behavior and interactions with health care providers among lower income women. *Medical Care*, 32(12), 1204-1211.
- *Montgomery, C., Lydon, A. & Lloyd, K. (1999). Psychological distress among cancer patients and informed consent. *Journal of Psychosomatic Research*, 46(3), 241-245.
- *Myers, R.E., Trock, B.J., Lerman, C., Wolf, T., Ross, E. & Engstrom, P.F. (1990). Adherence to colorectal cancer screening in an HMO population. *Preventative Medicine*, 19, 502-514.
- Nail, L.M. (2001). I'm coping as fast as I can: psychosocial adjustment to cancer and cancer treatment. *Oncology Nursing Forum*, 28(6), 967-970.
- *Oberst, M.T. (1984). Patients' perceptions of care. *Cancer*, 15 Supplement, 2366-2373.
- Ong, L.M.L., De Haes, J.C.J.M. & Lammes, F.B. (1995). Doctor-patient communication: a review of the literature. *Social Science Medicine*, 40 (7), 903-918.
- Ong, L.M.L., Visser, M.R.M., Lammes, F.B. & de Haes, J.C.J.M. (2000). Doctor-patient communication and cancer patients' quality of life and satisfaction. *Patient Education and Counseling*, 41, 145-156.
- Participants in the Bayer-Fetzer Conference on Physician-Patient Communication in Medical Education. (2001). *Academic Medicine*, 76 (4), 390-393.
- Petitti, D.B. (2000). Meta-analysis, decision analysis, and cost-effectiveness analysis- Methods for quantitative synthesis in Medicine (Second Edition). New York: Oxford University Press, 2-136.
- Ray, C., Fisher, J. & Wisniewski, T.K.M. (1986). Surgeon's attitudes toward breast cancer, its treatment, and their relationship with patients. *Journal of Psychosocial Oncology*, 4 (1/2), 33- 44.
- Reynolds, P.M., Sanson-Fisher, R.W., Poole, A.D., Harker, J. & Byrne, M.J. (1981). Cancer and communication: information-giving in an oncology clinic. *British Medical Journal*, 282,1449-1451.
- *Risberg, T., Bremnes, R.M., Wist, E., Kaasa, S. & Jacobsen, B.K. (1997). Communicating with and treating cancer patients: how does the use of non-proven

- therapies and patients' feelings of mental distress influence the interaction between the patient and the hospital staff. *European Journal of Cancer*, 33(6), 883-890.
- Roberts, R.A. & Birch, N.J. (2001). A comparison of breast cancer secondary prevention activities and satisfaction with access and communication issues in women 50 and over. *Preventive Medicine*, 32(4), 348-358.
- Rosenthal, R. & DiMatteo, M.R. (2001). Meta-analysis: Recent developments in quantitative methods for literature reviews. *Annual Review Psychology*, 52, 59-82.
- Roter, D. (2000). The enduring and evolving nature of the patient-physician relationship. *Patient Education and Counseling*, 39, 5-15.
- Roter DL & Hall JA. Doctors talking with patients, patients talking with doctors-Improving communication in medical visits. Connecticut: Greenwood Publishing Group, Inc., 1993; 10-153.
- Sapir, R., Catane, R., Kaufman, B., Isacson, R., Segal, A., Wein, S. & Cherny, N.I. (2000). Cancer patient expectations of and communication with oncologists and oncology nurses: the experience of an integrated oncology and palliative care service. *Support Care Cancer*, 8, 458-463.
- *Sardell, A.N. & Trierweiler, S.J. (1993). Disclosing the cancer diagnosis. *Cancer*, 72, 3355-3365.
- Shadish, W.R. & Haddock, C.K. (1994). Combining estimates of effect size. H. Cooper and L.V. Hedges. (Eds.). *The Handbook of Research Synthesis*. New York: Russell Sage Foundation; 261-281.
- *Simmons, K. & Lindsay, S. (2001). Psychological influences on acceptance of postsurgical treatment in cancer patients. *Journal of Psychosomatic Research*, 51, 355-360.
- Smith, G.C. & Strain, J.J. (2002). George Engel's contribution to clinical psychiatry. *Australian & New Zealand Journal of Psychiatry*, 36(4), 458-466.
- Squier, R.Q. (1990). A model of empathic understanding and adherence to treatment regimens in practitioner-patient relationships. *Social Science Medicine*, 30(3), 325-339.
- *Steptoe, A., Sutcliffe, I., Allen, B. & Coombes, C. (1991). Satisfaction with communication, medical knowledge, and coping style in patients with metastatic cancer. *Social Science Medicine*, 32(6), 627-632.

- Stewart, M.A. (1995). Effective physician-patient communication and health outcomes: a review. *Canadian Medical Association Journal*, 152 (9), 1423-1433.
- Stewart, M. & Roter, D. (ed.). (1989). *Communicating with medical patients*. California: Sage Publications Inc., 223-246.
- *Takayama, T., Yamazaki, Y. & Katsumata, N. (2001). Relationship between outpatients' perceptions of physicians' communication styles and patients' anxiety levels in a Japanese oncology setting. *Social Science & Medicine*, 53, 1335-1350.
- van der Kam, W.J., Branger, P.J., van Bommel, J.H. & Meyboom-de Jong, B. (1998). Communication between physicians and with patients suffering from breast cancer. *Family Practice*, 15 (5), 415-419.
- *Velikova, G., Brown, J.M., Smith, A.B. & Selby, P.J. (2002). Computer-based quality of life questionnaires may contribute to doctor-patient interactions in oncology. *British Journal of Cancer*, 86, 51-59.
- Waitzkin, H. (1985). Information giving in medical care. *Journal of Health and Social Behavior*, 26, 81-101.
- Weisman, AD. (1989). A model for psychosocial phasing in cancer. *General Hospital Psychiatry*, 187-195.
- White, M.K. & Malik, T. (1999). Teaching clinician-patient communication in the treatment of breast disease. *Journal of Women's Health*, 8, 39-44.
- Wiggers, J.H., Donovan, H.O., Redman, S. & Sanson-Fisher, R.W. (1990). Cancer patient satisfaction with care. *Cancer*, 3, 610-616.
- Wolf, F.M. (1986). *Meta-analysis: Quantitative methods for research synthesis*. Beverly Hills, CA: Sage.
- *Yoder, L.H., O'Rourke, T.J., Etnyre, A., Spears, D.T. & Brown, T.D. (1997). Expectations and experiences of patients with cancer participating in phase 1 clinical trials. *Oncology Nursing Forum*, 24(5), 891-896.
- *Yu, C.L.M., Fielding, R., Chan, C.L.W. & Sham, J.S.T. (2001). Chinese nasopharyngeal carcinoma patients treated with radiotherapy. *Cancer*, 92(8), 2126-2135.
- Zinn, W. (1993). The empathic physician. *Archives of Internal Medicine*, 153, 306-312.

APPENDIX A

A Data Sheet used for Coding Studies in the Meta-Analysis

Study D	Date	Total	Hetero.	Breast	type	Effect Sz.	depname	male	female	age	Phys. Status
4	1999	525	216	309	.	0.23	1	89	71	.	3
6	1986	157	82	18	.	0.23	1	.	.	57	2
5	1996	144	88	56	.	0.43	1	31	113	47.8	.
9	1991	77	77	0	1	0.56	1	14	63	60.9	2
7	1983	20	20	0	1	1.04	1	8	12	48	.
2	1996	497	367	130	.	1.19	1	151	346	56	1
1	2001	147	73	74	.	1.63	1	49	98	57.6	2
10	1997	180	138	42	.	1.39	1	88	92	58	2
11	1998	100	53	47	.	0.38	1	30	70	58	2
12	2002	80	80	0	1	1.2	1	32	48	58	1
13	2001	101	40	61	.	1.28	1	24	77	.	2
14	2001	233	229	46	.	0.49	1	133	100	56.7	2
18	1994	97	0	0	.	0.76	1	56	41	.	2
20	2002	28	0	0	.	0.67	1	6	22	57.4	2
21	2002	60	0	60	2	1.18	1	.	60	53.7	3
22	1989	60	60	0	1	0.63	1	60	.	41	3
23	1998	48	48	.	1	2.96	1	26	22	.	3
24	2001	211	211	.	1	0.48	1	156	55	49.7	2
29	2002	613	.	613	2	0.2	1	.	613	75	3
31	1997	37	37	.	1	0.54	1	21	16	55	3
3	1993	97	.	97	2	0.85	2	0	97	55	2
5	1996	144	88	56	.	0.43	2	31	113	47.8	3
7	1983	20	20	.	1	-0.32	2	8	12	48	3
8	1993	56	42	14	.	1.54	2	21	35	55	3
11	1998	100	53	47	.	0.38	2	30	70	58	2
9	1991	77	77	.	1	0.53	2	14	63	63.9	2
13	2001	101	40	61	.	0.7	2	24	77	.	2
14	2001	233	229	46	.	0.23	2	133	100	56.7	2
21	2002	60	.	60	2	0.72	2	.	60	53.7	3
15	1991	963	.	.	.	0.24	3	.	963	53	1
16	2000	125	.	.	.	0.49	3	.	125	.	1
17	2001	158	85	73	.	0.54	3	37	121	59.2	3
19	2000	675	.	.	.	2.2	3	.	675	.	1
25	1992	333	.	.	.	0.27	3	140	193	67	1
26	1990	322	.	.	.	0.48	3	141	181	61	3
27	1994	972	.	.	.	0.22	3	.	972	.	3
28	1991	963	.	.	.	0.47	3	.	963	.	1
30	1997	685	.	.	.	0.93	3	.	.	55	3

highsc	post-sec.	edu.unkn.	first	recurrent	metast	dis_unkno	Country	Stat.	es	w_es	Quality
.	.	525	.	.	.	525	Scotland	t	0.23	0.3	3
.	.	157	.	.	.	157	USA	X2-Chi	0.23	0.16	4
.	.	144	.	.	.	144	Australia	p	0.43	0.29	4
.	.	77	.	.	.	77	Britain	r	0.56	0.28	4
.	.	20	.	.	.	20	USA	r	1.04	0.26	3
.	.	497	.	.	161	336	Norway	r	1.19	1.5	4
.	.	147	.	66	.	81	Japan	r	1.63	1.12	5
.	.	180	.	.	.	180	Norway	%	1.39	1.05	4
.	.	100	.	.	.	100	UK	%	0.38	0.21	4
.	.	80	.	.	.	80	Scotland	%	1.2	0.61	3
39	38	24	.	.	.	101	Australia	%	1.28	0.73	3
76	91	24	.	.	83	150	Australia	p	0.49	0.42	3
.	.	97	.	.	.	97	Spain	p	0.76	0.42	3
.	12	16	.	.	.	28	UK	p	0.67	0.2	4
.	.	60	.	.	.	60	USA	%	1.18	0.52	4
.	.	60	.	.	.	60	USA	p	0.63	0.28	5
.	20	28	.	.	.	48	USA	%	2.96	1.16	5
77	19	115	.	23	.	188	China	p	0.48	0.39	3
165	190	258	.	.	.	613	USA	p	0.2	0.28	3
.	.	37	.	.	.	37	USA	%	0.54	0.19	4
.	.	97	.	.	.	97	USA	r	0.85	0.47	4
.	.	.	.	.	.	.	Australia	p	0.43	0.29	.
.	.	.	.	.	.	.	USA	r	-0.32	-0.08	.
.	.	56	.	.	.	56	USA	r	1.54	0.65	4
.	.	.	.	.	.	.	UK	%	0.38	0.21	.
.	.	77	.	.	.	.	UK	f	0.53	0.26	.
.	.	.	.	.	.	.	Australia	%	0.7	0.4	.
.	.	.	.	.	83	.	Australia	p	0.23	0.2	.
.	.	.	.	.	.	.	USA	r	0.72	0.32	.
210	317	436	.	.	.	963	USA	p	0.24	0.42	4
.	.	125	.	.	.	125	Isreal	%	0.49	0.31	3
.	43	115	.	.	.	158	UK	r	0.54	0.38	4
295	377	3	.	.	.	675	USA	p	2.2	3.23	4
273	.	60	.	.	.	333	USA	p	0.27	0.28	3
.	.	322	.	.	.	322	USA	p	0.48	0.49	4
253	291	428	.	.	.	972	USA	p	0.22	0.39	5
210	317	436	.	.	.	963	USA	p	0.47	0.83	5
.	.	685	.	.	.	685	USA	%	0.93	1.38	4