An evidence base for patient-centered cancer care: A meta-analysis of studies of observed communication between cancer specialists and their patients. Patient Education and Counseling...
An evidence base for patient-centered cancer care: A meta-analysis of studies of observed communication between cancer specialists and their patients

Maria K. Venetis a,*, Jeffrey D. Robinson b, Katie LaPlant Turkiewicz c, Mike Allen c

a Department of Communication, Rutgers University, 4 Huntington Street, New Brunswick, NJ 08901, USA
b Department of Communication, Portland State University, USA
c Department of Communication, University of Wisconsin-Milwaukee, USA

ARTICLE INFO

Article history:
Received 14 November 2008
Received in revised form 31 March 2009
Accepted 11 September 2009

Keywords:
Cancer
Meta-analysis
Communication
Patient-centered
Participation

ABSTRACT

Objective: In the context of patients visiting cancer specialists, the objective is to test the association between both patient-centered communication (including Affective Behavior and Participation Behavior) and Instrumental Behavior and patients’ post-visit satisfaction with a variety of visit phenomena.

Methods: Meta-analysis of 25 articles representing 10 distinct data sets.

Results: Both patient-centered- and instrumental behavior are significantly, positively associated with satisfaction, with patient-centered communication having a relatively stronger association.

Conclusion: There is an evidence base for the efficacy of patient-centered care.

Practice implications: Cancer specialists need to train to improve their patient-centered communication.

© 2009 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

One unique contribution of health communication as a field of inquiry has been its focus on the health-related effects of observed communication (i.e., taped and coded, vs. self-reported) physician–patient communication variables [1]. In the last decade, with a worsening global cancer crisis [2], the physician–patient literature has been re-focusing its attention from primary care delivered by general-practice physicians to cancer care delivered by specialists (e.g., oncologists). The current (and relatively small) pool of studies of observed cancer communication suffer from two limitations. First, similar to a critique made 20 years ago by Roter et al. [3], different studies focus on different independent and dependent variables, and even similarly conceptualized (and labeled) variables tend to be differently operationalized. Second, studies suffer from reduced statistical power due to small sample sizes. Combined, these two limitations virtually prohibit empirically rigorous claims regarding the effects of particular communication behaviors on particular outcomes. Stated differently, these weaknesses stand as major barriers to achieving the goal of evidence-based medicine [4]. One solution to this problem is meta-analysis [5–7]. In the context of studies of observed communication between cancer specialists and their patients, this paper uses meta-analysis to investigate whether or not patient-centered care is significantly associated with patients’ health outcomes. This paper begins by briefly describing the unique ecology of cancer care, and then reviews patient-centered-care communication (Table 1).

1.1. Cancer care as a unique medical context

The diagnosis of cancer most commonly emerges from biopsies and imaging tests ordered by patients’ primary-care physicians (e.g., internists), who then refer patients to specialists (e.g., oncologists). For this reason, studies of cancer-care communication between physicians and patients focus, almost exclusively, on visits that take place after patients are diagnosed with cancer (most exceptions to this are qualitative/discursive analyses of the delivery of ‘bad’ cancer news; e.g., Maynard [8]). In at least three ways, visits between patients who have already been diagnosed with cancer and specialists represent a unique ecology [9] for communication and its effects. First, there is evidence that, relative to primary-care physicians, specialists are less competent communicators [10] and more resistant to changing their communication skills [11]. From cancer patients’ perspectives, cancer-care specialists need to improve patient-centered aspects of their communication [12,13]. Second, research has shown that the types of problems that get dealt with during medical visits – such as new acute problems (e.g., flu) and chronic-routine problems (e.g., diabetes) – differentially affects physicians’ and patients’ goals for visits, which differentially shapes the content and process of communication [14,15]. Relative to most types of primary-care
visits, the goals of many cancer-care visits are different and more narrow. For example, many cancer-care visits are with various types of oncologists and have the goal of developing treatment plans. These visits emphasize treatment information and decision making, and do not typically include a traditional problem presentation, history taking, physical examination, and diagnosis.

Third, relative to primary care, the psychosocial (vs. biomedical) dimension of illness (vs. disease) [16] is more pronounced when the problem is cancer [17]; i.e., relative to acute problems in primary care (e.g., flu, back pain, etc.) [18], cancer presents patients with higher levels of uncertainty, anxiety, fear, frustration, and vulnerability. Akin to organizational communication generally [19], physicians’ and patients’ discriminate between two underlying dimensions of communication: medical-technical (i.e., instrumental) and affective-relational [20]. The affective-relational dimension is particularly salient to patients. For example, patients do not abide strictly by a rational-consumer model of medicine. That is, patients seldom evaluate physicians and their medical care/competence, nor do patients retain physicians, based solely on physicians’ medical-technical skills and patients’ health outcomes [21]. Although patients base their evaluations of physicians’ communicative competence on both the instrumental and affective dimensions, which are positively correlated [22–24], there is an accumulation of evidence that patients’ evaluations of the quality of physicians’ and their medical care are influenced more heavily by the affective dimension [22,25,26]. In sum, the unique ecology of cancer-communication warrants an examination independent from that of primary care.

1.2. Patient-centered communication

It is well established that physicians’ and patients’ communication behaviors, generally speaking, have the potential to positively shape patients’ post-visit health outcomes, such as their satisfaction and their physical and psychological quality of life (for review, see Stewart [11]). Given that patients prioritize the affective-relational (vs. instrumental) dimension of communication (see above), one type of communication that has been shown to be strongly associated with patients’ health outcomes is patient-centered communication, or that which attends to: (1) patients’ affective states (e.g., fear, vulnerability, hopelessness, uncertainty); (2) patients’ (vs. physicians’) values, needs, and preferences, including psychosocial (vs. biomedical) content; and (3) patient empowerment in terms of having control over topical directions, decision making, etc. [4,18,27,28]. Patient-centered communication is typically operationalized in two main ways: (1) Affective Behavior [14,29,30], including physicians’ displays of empathy, concern, reassurance, etc.; and (2) Participation Behavior, including patients’ questions and physicians’ prompts for them [31–37].

In the context of cancer care, prior research consistently suggests that patient-centered communication is associated with a variety of types of patients’ health outcomes. For example, communication behaviors that address the affective (vs. instrumental) dimension “positively” (e.g., reassurance) have been associated with decreases in patients’ requests for post-operative narcotics [38,39] and increases in patients’ levels of physical functioning, such as their levels of blood glucose and diastolic blood pressure [40]. However, in the context of observed cancer communication, by far the most frequently studied health outcome has been patients’ satisfaction-like constructs (e.g., satisfaction with physicians’, their communication, information received, treatment decisions, etc.). Research suggests that patient-centered aspects of care are significantly, positively associated with patients’ satisfaction [41], which is important in a variety of ways. For example, patients’ satisfaction with oncologists is positively associated with patients’ willingness to participate in breast-cancer clinical trials [42] and adherence to medical recommendations [43,44], and has become an important determinant of health-care services’ and medical schools’ communication-training objectives [45]. Patients’ satisfaction with treatment decisions has been positively associated with patients’ adherence to/continuance of treatment [46] and with their post-treatment quality of life [47,48]. Patients’ dissatisfaction with treatment decisions has been positively associated with their experimentation with alternative therapies [49].

One type of communication that is typically not considered to be patient-centered is Instrumental Behavior [18,27,28,50], including physicians’ question asking and patients’ information giving. Importantly, Instrumental Behavior is medically necessary, and thus not pejorative, and has also been found to be associated with patients’ post-visit satisfaction [51].

This article uses meta-analysis [5–7] to answer three research questions pertaining to studies of observed (i.e., taped and coded) communication between cancer-specialists and their patients:

RQ 1: What is the association between patient-centered communication and satisfaction-like health outcomes?

RQ 2: What is the association between instrumental behavior and satisfaction-like health outcomes?

RQ 3: Are patient-centered communication and instrumental behavior significantly different in terms of their strength of association with satisfaction-like health outcomes?

2. Methods

2.1. Literature search

The article search began January 2007 and ended March 2009. The study pool for the meta-analysis was initially created utilizing the web-based search engines PsychINFO, EbscoHost, and Medline using combinations of the keywords cancer, communication, oncologist, physician, patient, audio, and video. In order to be included, articles had to have been reported in English, had to involve visits in which patients who were already diagnosed with cancer, who interacted with physicians (vs. nurses, etc.), had to involve the coding and quantification of taped communication behavior, and had to involve the statistical association of communication variables with either themselves or post-visit health outcomes. Bibliographies of all first-pass articles were examined for additional applicable studies. Finally, we contacted the authors of all applicable studies and sought additional applicable unpublished studies (none were generated). The article search yielded 25 articles (which are denoted with asterisks in the References) representing 10 distinct data sets [14,31–37,50,52–67]. From each data set, we omitted variable relationships when authors did not report correlation data sufficient for a meta-analysis.

2.2. Variable coding

Each communication variable in every data set was coded, a priori, as representing either Patient-Centered Communication or Instrumental Behavior. Our variable Patient-Centered Communication was itself composed of two classes of variables: Affective Behavior and Participation Behavior. Affective Behavior [64] included physicians’ displays of approval, empathy, concern, worry, reassurance, optimism, and positive affect, and both oncologists’ and patients’ social/informal talk (Affective Behavior was predominantly, but not exclusively, a physician-level variable). Participation Behavior [32–37] included both: (1) Physician Facilitation, which included physicians’ communication behaviors that are specifically designed to promote patients’ self-determined,
communicative participation, such as prompting patients to ask questions and voice concerns, and soliciting patients’ opinions; and (2) Patient Participation, which included patients’ communicative behaviors that initiate actions that solicit some type of response from physicians, such as patients’ asking questions, voicing preferences and concerns, and giving opinions. Finally, our variable Instrumental Behavior [64] included physicians’ question asking and counseling/direction giving, and both physicians’ and patients’ information giving.

For each communication variable in each data set, we coded each related health outcome, a priori, in terms of whether or not it represented a type of patients’ Satisfaction. Our variable Satisfaction was composed of different types of ‘satisfaction-like’ constructs, not only including patients’ satisfaction with visits generally, with specific aspects of visit communication (e.g., amount of information received; the treatment decision), and with physicians personally, but also with patients’ perceptions of their levels of control, involvement, and participation during visits, and patients’ perceptions of physicians’ levels of collaboration. Four articles separately measured a different non-satisfaction-based health outcome, including patients’ anxiety, coping, quality of life, and information recall. There was not a sufficient amount of data to meta-analytically study these outcomes.

2.3. Statistical analysis

Meta-analysis is a method of comparing findings of different studies. The problem with differences between the findings of individual studies is that inconsistent findings (as determined by the significance test) can be the result of either random sampling error or systematic factors. Meta-analysis describes a set of techniques that take a series of data sets and seeks to combine their estimates for an average that reduces sampling error, and facilitates an examination of sources of variability in findings [5–7].

A meta-analysis consists of the following steps: (1) The conversion of individual data sets to a common metric; (2) the averaging of individual estimates to form an overall estimate; and (3) the consideration of sources of variability, and explanations for differences among study findings. The conversion of individual data sets to a common metric follows a series of expectations about the nature of statistical relations [6]. Some articles employed designs that generated appropriate information but are not included in this report because the format of the statistical reporting does not permit estimation of zero-order relations. The use of multivariate statistics generates coefficients that could have been generated by any number of zero-order correlation matrices. What this means is that generation of the underlying relationships is not possible and the data not recoverable for use in a meta-analysis [6]. The calculation of the average estimate uses a weighting system that reflects the sample size of the estimate. The weighting by sample size simply reflects the assumption that larger samples have less sampling error and are more accurate estimates than smaller samples [5]. Concern exists about the impact of using multiple effects from the same sample. This violation of independence of the estimates could impact the estimation of the mean effect or estimates of the variance or standard deviation of the sample. A Monte Carlo simulation of the impact of such violations demonstrated that neither the mean nor estimates of the variance are impacted by this problem [68].

3. Results

3.1. Research question 1

Answering RQ 1, Patient-Centered Communication (which included the combination of Affective Behavior and Participation Behavior) was significantly, positively associated with patients’ post-visit Satisfaction (which included a range of satisfaction-like measures): k = 38, N = 3467, average r = .143, \( \chi^2 = 62.33, p < .05 \). Although Affective Behavior was itself significantly, positively associated with Satisfaction, k = 22, N = 2240, average r = .163, \( \chi^2 = 47.1, p < .05 \). Participation Behavior was not: k = 16, N = 1227, average r = .107, \( \chi^2 = 12.88, p > .05 \). Neither of the sub-components of Participation Behavior were themselves significantly associated with Satisfaction, including Physician Facilitation, k = 5, \( N = 562, \) average r = .067, \( \chi^2 = 3.24, p > .05 \), and Patient Participation: k = 11, N = 665, average r = .141, \( \chi^2 = 8.08, p > .05 \). However, these two sub-components were significantly, positively associated, k = 7, N = 269, average r = .101, \( \chi^2 = 23.06, p < .05 \), suggesting a logical sequential relationship between physicians’ prompts for patients’ participation and its realization.

3.2. Research question 2

Answering RQ 2, Instrumental Behavior was significantly, positively associated with patients’ post-visit Satisfaction (which included a range of different types of satisfaction measures): k = 9, \( N = 911, \) average r = .076, \( \chi^2 = 29.8, p < .05 \).

3.3. Research question 3

Answering RQ 3, Patient-Centered Communication (which included the combination of Affective Behavior and Participation Behavior) was significantly more strongly associated with patients’ post-visit Satisfaction (which included a range of different types of satisfaction measures) than was Instrumental Behavior: \( z = 6.11, p < .05 \). Affective Behavior was itself significantly more strongly associated with Satisfaction than was both Participation Behavior, \( z = 2.62, p < .05 \), and Instrumental Behavior: \( z = 9.26, p < .05 \). Participation Behavior and Instrumental Behavior were not significantly different in terms of their strength of association with Satisfaction: \( z = 1.61, p > .05 \).

4. Discussion and conclusion

4.1. Discussion

Ultimately, the goal of basic research on the relationship between physicians’ and patients’ communication behaviors, and the effects of such behaviors on patients’ healthcare outcomes, is the implementation and testing of communication interventions toward the goal of improving patients’ biopsychosocial wellness. Effectively changing health behavior necessitates a connection between scientific evidence and critical analysis [69]. Making this a connection can be facilitated by meta-analysis [70,71]. This article examined studies of observed (i.e., taped and coded) communication between cancer-specialists (e.g., oncologists) and their patients; It used meta-analysis to test the association

<table>
<thead>
<tr>
<th>Communication variable</th>
<th>Relationship to satisfaction</th>
<th>Relative strength of relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Patient-centered communication</td>
<td>r = 143^*</td>
<td>a1</td>
</tr>
<tr>
<td>1a. Affective behavior</td>
<td>r = 163^*</td>
<td>b1, c1</td>
</tr>
<tr>
<td>1b. Participation behavior</td>
<td>No</td>
<td>c2</td>
</tr>
<tr>
<td>1b1. Physician facilitation</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>1b2. Patient participation</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>2. Instrumental behavior</td>
<td>r = .076^*</td>
<td>a2, b2</td>
</tr>
</tbody>
</table>

Note: Similarly lettered relationships are significantly different from one another, with lower superscripted numbers indicating a stronger relationship.

^ All significance levels are \( p < .05 \).
between both Patient-Centered Communication and Instrumental Behavior and patients’ post-visit health outcomes involving satisfaction-like constructs. Both Patient-Centered Communication and Instrumental Behavior were significantly, positively associated with Satisfaction, and thus are essential to quality cancer care.

For the purposes of our meta-analysis, we operationalized Patient-Centered Communication as involving both Affective Behavior (e.g., physicians reassuring patients [64]), and Participation Behavior (e.g., physicians prompting patients to initiate actions, such as ask questions or express concerns, and patients initiating such actions; [32–37]). We included Participation Behavior because it represents a key feature of patient-centered care, which is patient empowerment/control [18,28]. Although Affective Behavior was itself significantly associated with Satisfaction, Participation Behavior was not. However combining Participation Behavior with Affective Behavior significantly increased the effect on Satisfaction.

The lack of significant association between Participation Behavior and Satisfaction was somewhat surprising to the authors. Future research needs to continue to investigate the effects-pathways from Participation Behavior to health outcomes. For example, it is possible to conceptualize Participation Behavior as a patient-centered form of Instrumental Behavior because it typically leads to physicians’ information giving. That is, regardless of how patients’ initiating actions (e.g., questions) are realized (i.e., prompted by physicians or self-initiated by patients), they normatively solicit physicians’ responses. In this sense, Participation Behavior involves either a three-part sequence (e.g., physician prompt → patient question → physician response) [72] or a two-part sequence (e.g., patient question → physician response) [63], both of which ultimately lead to Instrumental Behavior. Research does not currently examine these sequential relationships.

Both Patient-Centered Communication (as a composite variable), and Affective Behavior (i.e., one sub-component of Patient-Centered Communication) had significantly stronger associations with Satisfaction than did Instrumental Behavior. Similar to findings in primary care [22,25,26], relative to Instrumental Behavior, patients’ evaluations of the quality of cancer-specialists and their medical care appear to be influenced more heavily by Patient-Centered Communication and Affective Behavior.

4.2. Conclusion

In conclusion, this article provides an evidence base for the efficacy of patient-centered care. This article is limited in several ways, most stemming from the small amount of research on observed (i.e., taped and coded) communication behavior during cancer care and its relationship to healthcare outcomes. Much more research is needed in this area, and authors should endeavor to include, in publications, statistical data that accommodates meta-analysis (e.g., zero-order correlation matrices). The studies included in our meta-analysis were conducted in several different nations (Australia, Japan, the Netherlands, and the United States), and due to limited data, we were not able to study the possible affect of nationality on communication behavior or Satisfaction. We only focused on one type of health outcome involving patients’ satisfaction with a variety of visit phenomena. Future communication research needs to broaden their focus on health outcomes beyond satisfaction-like constructs to those that would allow comparability with arguably more mainstream medical research, such as patient’s anxiety and depression [54,73], mental adjustment to cancer (i.e., cancer coping, such as fatalism and helplessness/hopelessness); [65,74] and cancer uncertainty [16]. Finally, we were unable to test the effect of patients’ companions’ communication behavior (and their presence is common in cancer care) because too little companion data is currently reported.

4.3. Practice implications

Our findings suggest that cancer-specialists (e.g., oncologists) need to attend continuing-medical-education courses dealing with improving their Patient-Centered Communication. Although, compared to general practitioners, it appears to be more difficult to train specialists [11], there is a wealth of evidence that communication-training programs can significantly increase physicians’ rates of patient-centered behaviors [75–78].

Conflict of interest

There are no conflicts of interest.

Acknowledgements

The four authors are the sole contributors to the manuscript.

References
