The Influences of Human Communication on Health Outcomes

GARY L. KREPS
Northern Illinois University
DAN O'HAIR
University of Oklahoma
MARSHA CLOWERS
Ohio University

This article examines the many assertions made in the health communication literature about the importance of communication as an essential process in promoting effective health care. If these assertions are true, then researchers should be able to demonstrate the ways in which communication influences the accomplishment of health care goals—how communication influences health outcomes. The links between health communication and health outcomes are examined, as well as the health outcomes literature. The authors propose a conceptual model of the role of communication in achieving advantageous outcomes in health care and health promotion based on the systems transformation model. The model can serve as a template for both guiding research on communication and health outcomes and for directing the health communication activities of interdependent participants in the modern health care system to promote desired health outcomes in health care/health promotion efforts.

Health promotion and maintenance are the primary goals of the modern health care system and an enormous amount of time, energy, and financial resources have been devoted to promoting and maintaining individual and public health in society. Major medical centers have been built and staffed; powerful new health care therapies, technologies, and pharmacological agents have been developed and applied; and a wide range of different health care providers have received intensive specialized training to advance the goals of health promotion and maintenance. Yet we contend that all of these potent health care resources are of limited utility if the providers and consumers of health care do not communicate effectively in the health care delivery process.

Effective health care and health promotion are guided by relevant health information. Communication is clearly the primary process used in health care to disseminate and gather relevant health information (Kreps, 1988). For exam-

Authors' Note: *An earlier version of this article was presented to the International Communication Association Conference, Sydney, Australia, July 1994.*

AMERICAN BEHAVIORAL SCIENTIST, Vol. 38 No. 2, November 1994 248-256

ple, relevant health information guides effective diagnosis of health care problems. Although medical technologies provide health care professionals with a great deal of diagnostic information, health care providers inevitably depend on gathering information directly from clients and those who are familiar with clients' lifestyles through the use of interviews. Similarly, health care professionals depend on communication to provide their clients with information about prescribed treatment strategies. How can clients follow prescribed health care regimens if the details of these regimens are not clearly explained to them? Consumers also need to communicate to gather relevant health information from different formal and informal sources to identify treatment options and to make knowledgeable treatment decisions. Communication is essential in the provision of social support (by health care providers, participants in formal or informal support groups, family members, or friends) to help the afflicted cope with, and confront, their health problems. Communication is also fundamental in coordinating the health care treatment activities of various interdependent providers and consumers.

COMMUNICATION AND HEALTH OUTCOMES

If the assertions made about the importance of communication as an essential process in promoting effective health care are true, then we should be able to demonstrate the ways in which communication influences the accomplishment of health care goals—how communication influences health outcomes. Before examining the link between health communication and health outcomes, we first must clarify what is meant by health outcomes.

Health outcomes research has taken a number of different paths in recent years. Most of us are familiar with the general health trends that are tracked by public and private agencies. Mortality and morbidity statistics plotted by epidemiologists are regularly reported to various constituencies and to the general public. Although sometimes only indirectly related to specific health outcomes, these trends reflect a general profile of health status that are used for policy-making and political maneuvering. For example, the Centers for Disease Control and Prevention, the National Institutes of Health, and the World Health Organization regularly report statistics that profile health outcomes as a strategy for developing policy on Capitol Hill or in the White House.

It is understandable that the escalating costs of health care have captured the attention of everyone from the president of the United States (and the first lady) to the medical delivery system to the consumers of health care, precipitating a national focus on the efficacy of health care. Effectiveness, efficacy, and value are generally thought to depict the general outcomes of medical care. Yet it is *specific* health outcomes that constitute a genuine assessment of health care delivery. As a result, increasing attention is being focused on the relationships between antecedent, process, and outcome variables. Conceptual and opera-

tional assessments of health outcomes, therefore, are and will continue to occupy the attention of medical researchers as they seek plausible answers to tough questions regarding the ultimate effects of health care.

Communication strategies between health care professionals, patients and their support groups, and governmental agencies should play a key role in determining and assessing health outcomes. However, with few exceptions (Greenfield, Kaplan, & Ware, 1985; Stewart & Roter, 1989), a focused examination of communication and health outcomes has not been reported in any systematic way. As a critical component of disease prevention, health restoration, and medical recovery processes, communication strategies must command increasing attention among health professionals and scholars as outcomes are examined. It is noted that not all health care delivery (prevention and restoration) is provided by formal means (e.g., paid health care professionals). Spouses, parents and other family members, and advocates such as friends can play important roles during communication exchanges that lead to productive health outcomes, although the specific impact of these formal and informal communication systems on health outcomes is not clearly understood at this time. The time has come to advance research that illuminates the important relationship between communication and health outcomes.

HEALTH OUTCOMES RESEARCH

A preliminary step toward exploring communication and health outcomes involves a general description of the literature on medical outcomes. Outcomes have been the subject of medical researchers since the early 1800s when a physician named Pierre-Charles-Alexander Louis in Paris examined statistics as a means of assessing the success of certain medical treatments (Cleary, 1990). Since that time, numerous strategies and methodologies have been suggested for determining the quality of health outcomes. Donabedian (1980) is often cited for his work on health outcomes. He suggested three approaches for assessing quality: examining the structure of the delivery system, analyzing the process of medical care, and observing medical outcomes. Most systems for assessing outcomes focus on process (Berwick, 1989; Cleary, 1990), although Donabedian argues for a greater concentration on the relationship between process and outcomes.

One of the more recent programs at the national level in assessing medical outcomes is the Effectiveness Initiative sponsored by the Health Care Financing Administration (HCFA) of the Department of Health and Human Services. This program identified the following objectives as its main thrusts (Heithoff, Lohr, & Rettig, 1990, p. 3):

1. to assess the merits of alternative health care interventions;
2. to provide information that would help clinicians in the management of their patients;

3. to assist and improve the Medicare program's quality assurance efforts; and
4. to aid policymakers in allocating Medicare resources.

The information collected by HCFA is voluminous and overwhelming, primarily focusing on mortality profiles of hospitals. The success of this initiative is unknown because hospitals are highly motivated to respond, in kind, to the results of the data reported by HCFA (Berwick, 1989).

IDENTIFYING OUTCOMES

Depending on the perspective taken and the sources cited, health outcomes can be described in various forms. Some researchers prefer to conceptualize outcomes according to temporal effects (short- versus long-term; Stewart & Roter, 1989). Other sources are inclined to characterize outcomes as statistical profiles (see above). Still other experts favor an approach that describes outcomes according to their relationship with the alternatives taken by patients and providers (Mully, 1990) or the processes involved in health care delivery (Eraker, Kirscht, & Becker, 1984; Levine et al., 1979; Morisky et al., 1983). Ultimately, it is the consumer, patient, or health target that benefits from health delivery processes (rather than bureaucrats), and it seems to us that outcomes should be conceptualized according to their impact on the individual. Based on a synthesis of previous research (see above), we propose that health outcomes can be categorized according to the *cognitive*, *behavioral*, and *physiological* effects on individuals. In Table 1 we present those specific outcomes as they are classified by our scheme.

MEASURING OUTCOMES

The measurement of outcomes appears in various forms, ranging from assessments at the individual level, to evaluation of outcomes for a particular office or organization, to aggregate outcomes pertaining to a population of patients or health consumers. Common to all targets of outcome assessment are the following parameters (Nelson, 1990, p. 208): valid and reliable measures of outcomes; systematic, repeated assessment of outcomes; convenient administration of assessment procedures; formalized links between outcome results and improvement efforts; and comparing results with other providers, organizations, and so on.

Problems with validity are often mentioned as serious shortcomings of outcomes research; however, Mully (1990) stated that the weaknesses usually cited for this type of research (internal validity) are more than made up for by the strengths and advantages (external validity, practical implications) offered for the ultimate users. According to this perspective, as long as the antecedent, intervention, and outcome processes are similar across trials, the pragmatic results accruing from this type of research can be highly beneficial.

TABLE 1: Health Outcomes

Cognitive	Physiological
Understanding/knowledge	Disease prevention
Diagnostic information	Recovery and recuperation processes
Commitment to health	Maintenance of desired health
Adjustment of health beliefs	Long-term survival
Confidence, satisfaction, and trust	Quality of life
Self-efficacy	
Managed expectations, fears, and anxieties	
Behavioral	
Compliance with regimen	
Adoption of prevention/health promoting behaviors	
Communication competence	
Team/partnership building	
Relational quality	
Partner competence/satisfaction	
Assertiveness/motivation	

THE RELEVANCE OF COMMUNICATION AND HEALTH OUTCOMES

There is a growing body of research aimed at investigating communication as an important variable in the health care and delivery process (Kreps, 1988; Kreps & Thornton, 1992; Reardon, 1988; Stewart & Roter, 1989). There is much less research to draw on if the concentration shifts to communication and health outcomes (Pettegrew, 1988). As one of the younger areas within the discipline of communication, health communication research has spent a great deal of time and effort cutting its teeth on the process of medical care delivery, particularly provider-patient relationships and media campaigns, with less attention devoted to actual links between communication and health outcomes. A few exceptions to this claim can be found in studies that examined communication and intentions to comply with treatment regimen (O'Hair, 1986; O'Hair, O'Hair, Southward, & Krayer, 1987) communication and satisfaction (Burgoon et al., 1987; Lane, 1983; Street & Wiemann, 1987, 1988), communication and compliance (Bartlett, Grayson, & Barker, 1984; Davis, 1968; Lane, 1982, 1983; Willson & McNamara, 1982), and communication and functional and physical outcomes (Bass et al., 1986; Morisky et al., 1983; Starfield et al., 1981).

Additional research that focuses on communication and health outcomes is needed for a number of reasons. There are practical reasons for this type of research. Outcomes research provides a tangible means for providing feedback to individuals who use communication to influence health status. For example, outcomes research can help health care practitioners enhance their understanding of how communication processes can influence the effectiveness of their efforts. Similarly, this type of research also is relevant to consumers of health care who can use the information this research generates in strategically

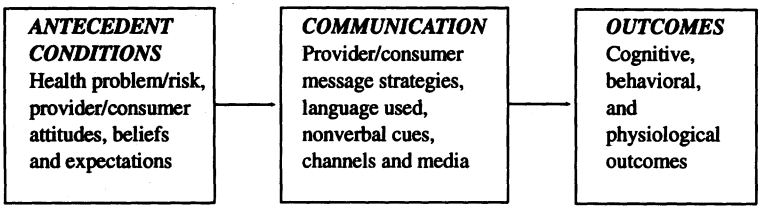

Figure 1: The Transformation Model of Communication and Health Outcomes

directing their own communication to promote their own health and the health of friends and family members seeking health care.

Not only do health care providers and consumers benefit from health outcomes research, but the communication discipline can also benefit from research that focuses on the relationship between theory and practical application that culminates in tangible results (Kreps, Frey, & O'Hair, 1991; O'Hair, Frey, & Kreps, 1990). Health outcomes research can validate the relevance of communication research and knowledge. Health care professionals and other professionals will be more likely to consult the literature in communication when they discover research findings that are useful for their needs. In summary, research examining the influences of communication on health outcomes can enhance both health care practice and health communication inquiry.

A TRANSFORMATION MODEL OF HEALTH OUTCOMES

We propose a model of health care delivery/health promotion based on systems theory to guide research on communication and health outcomes. See Figure 1 for the Transformation Model of Communication and Health Outcomes. The model is based on the systems theory transformation model of input-process-output (Berrian, 1968; Bertalanffy, 1968). According to the transformation model, inputs are the antecedent conditions that are the raw materials that energize systems activities, processes are the activities performed by functional components of the system to accomplish system goals, and outputs are the actual outcomes of system activities (Kreps, 1990). In our model, the *antecedents* of health care/health promotion efforts are the inputs, the *communication* activities that consumers and providers of health care engage in are the processes, and the *outcomes* of health care/health promotion efforts are the outputs. The model suggests that, in examining the influences of communication on health outcomes, researchers should recognize the ways antecedent conditions such as the nature of the health problem/risk and provider and consumers attitudes, beliefs, and expectations influence health care delivery. Researchers should examine health communication behaviors, evaluating the ways verbal and nonverbal messages are used to establish provider and consumer roles; develop provider-consumer relationships; and elicit and/or disseminate rele-

vant health information. In assessing outcomes, researchers should recognize the influences of communication on cognitive, behavioral, and physiological outcomes.

This model derives great explanatory power by building on general systems theory. It illustrates several important systems theory concepts and principles, such as multiple hierarchical levels of organization; the pursuit of negative entropy through functional integration and interdependence of systems components; wholeness, nonsummativity, and synergy; and equifinality. Let us examine how these systems concepts apply to the transformation model of health outcomes. The systems principles incorporated in the Transformation Model of Communication and Health Outcomes provide important perspectives for evaluating the effectiveness of health care/health promotion efforts.

The Transformation Model of Communication and Health Outcomes clearly illustrates the ways in which communication is used in organizational life to resist the natural degradation and disorganization of entropy (achieving negative entropy) by transforming relevant inputs (antecedent conditions) into advantageous outputs (health outcomes). It is important to recognize that systems processes must be functionally integrated to effectively transform systems inputs into advantageous outputs. In the model this means that communicators in health care/promotion must be able to work interdependently to share relevant information, developing cooperative relationships, and coordinating health care/promoting activities to produce desired health outcomes. Furthermore, the systems concept of nonsummativity suggests that when components of systems are functionally integrated they illustrate wholeness (they are more than the mere sum of their parts) and generate extra energy for the system (synergy). This means that coordination between participants in health care/health promotion efforts can enhance health outcomes through effective communication.

The systems principle of equifinality suggests that when systems confront situations where there are diverse inputs, they need to innovate system processes to accomplish desired outputs. Because the antecedent conditions encountered in health care are based on the idiosyncratic characteristics of individual health care providers and consumers, they inevitably will differ from one health care/promotion situation to another, making it incumbent on participants in the health care system to adapt their communication strategies (messages, channels, media, etc.) to resist entropy and to achieve desired health outcomes. Therefore, there are no golden rules for effective health communication in every situation. Health communicators must adapt to the specific individuals and situations encountered in health care/promotion.

Although one might assume that the model illustrates only one level of health care delivery, such as the interpersonal context of health care, where health care providers and consumers communicate to share relevant health information and develop cooperative relationships, the model can be readily applied to multiple hierarchical levels of health care and health promotion. For example, the model applies equally well to the intrapersonal level of health care, illustrating the

communicative processes where individuals gather information to confront, to work through, and to make relevant decisions about their health problems. It powerfully models the role of communication at the group level of health care, where members of a health care team deliberate to reach important health care treatment decisions. It clearly describes the important functions of communication at the organizational level of health care, where members of modern health care systems share relevant information to coordinate the use of different organizational resources, personnel, and technologies to provide health care services. It also describes the role of communication at the societal level of health promotion, where campaign planners design and disseminate relevant message strategies using strategic communication channels and media to help target audiences resist health threats. The model provides a good template for designing and conducting research that examines the influences of communication on health outcomes at multiple hierarchical levels and for strategically directing the health communication activities of interdependent participants in the modern health care system to promote desired health outcomes in health care/health promotion efforts.

REFERENCES

Bartlett, E. E., Grayson, M., & Barker, R. (1984). The effects of physician communication skills on patient satisfaction, recall and adherence. *Journal of Chronic Diseases, 37*, 755-764.

Bass, M. J., Buck, C., Turner, L., Dickie, G., Pratt, G., & Robinson, H. C. (1986). The physician's actions and the outcomes of illness in family practice. *Journal of Family Practice, 23*(1), 43-47.

Berrian, F. K. (1968). *General and social systems*. New Brunswick, NJ: Rutgers University Press.

Bertalanffy, L. V. (1968). *General systems theory*. New York: Braziller.

Berwick, D. M. (1989). Continuous improvement as an ideal in health care. *Sounding Board, 320*, 53.

Burgoon, M., Parrott, R., Burgoon, J. K., Birk, T., Pfau, M., & Coker, R. (1987). Primary care physicians' selection of verbal compliance-gaining strategies. *Health Communication, 2*(1), 13-27.

Cleary, P. D. (1990). Using patient reports of outcomes to assess effectiveness of medical care. In K .A. Heithoff & K. N. Lohr (Eds.), *Effectiveness and outcomes in health care* (pp. 152-159). Washington, DC: National Academy Press.

Davis, M. S. (1968). Variations in patients' compliance with doctor's advice: An empirical analysis of patterns of communication. *American Journal of Public Health, 58*(2), 274-288.

Donabedian, A. (1980). Explorations in quality assessment and monitoring, Volume 1. *The definition of quality and approaches to its assessment*. Ann Arbor, MI: Health Administration Press.

Eraker, S. A., Kirscht, J. P., & Becker, M. H. (1984). Understanding and improving patient compliance. *Annals of Internal Medicine, 100*, 258-268.

Greenfield, S., Kaplan, S., & Ware, J. E. (1985). Expanding patient involvement in care: Effects on patient outcomes. *Annals of Internal Medicine, 102*, 520-528.

Heithoff, K. A., Lohr, K. L., & Rettig, R. A. (1990). Genesis of the effectiveness initiative and IOM's role. In K. A. Heitoff & K. N. Lohr (Eds.), *Effectiveness and outcomes in health care* (pp. 3-7). Washington, DC: National Academy Press.

Kreps, G. L. (1988). The pervasive role of information in health and health case: Implications for health communication policy. In J. A. Anderson (Ed.), *Communication yearbook 11* (pp. 238-276). Newbury Park, CA: Sage.

Kreps, G. L. (1990). *Organizational communication: Theory and practice* (2nd ed.). White Plains, NY: Longman.

Kreps, G. L., Frey, L., & O'Hair, D. (1991). Applied communication research: Scholarship that can make a difference. *Journal of Applied Communication Research, 19*, 71-87.

Kreps, G. L., & Thornton, B. C. (1992). *Health communication: Theory & practice* (2nd ed.). Prospect Heights, IL: Waveland.

Lane, S. (1982). Communication and patient compliance. In L. Pettegrew (Ed.), *Straight talk: Explorations in provider-patient interaction* (pp. 59-69). Louisville, KY: Humana.

Lane, S. (1983). Compliance, satisfaction, and physician-patient communication. In R. Bostrom (Ed.), *Communication yearbook 7* (pp. 772-799). Newbury Park, CA: Sage.

Levine, D. M., Green, L. W., Deeds, S. G., Chwalow, J., Russell, R. P., & Finlay, J. (1979). Health education for hypertensive patients. *Journal of the American Medical Association, 241*, 1700-1703.

Morisky, D. E., Levine, D. M., Green, L. W., Shapiro, S., Russell, R. P., & Smith, C. R. (1983). Five year blood pressure control and mortality following health education for hypertensive patients. *American Journal of Public Health, 73*, 153-162.

Mully, A. G. (1990). Applying effectiveness and outcomes research to clinical practice. In K. A. Heitoff & K. N. Lohr (Eds.), *Effectiveness and outcomes in health care* (pp. 179-189). Washington, DC: National Academy Press.

Nelson, E. C. (1990). Using outcome measures to improve care delivered by physicians and hospitals. In K. A. Heithoff & K. N. Lohr (Eds.), *Effectiveness and outcomes in health care* (pp. 201-211). Washington, DC: National Academy Press.

O'Hair, D. (1986). Patient preferences for physician persuasion strategies. *Theoretical Medicine, 7*, 147-164.

O'Hair, D., Frey, L. & Kreps, G. L. (1990). Conceptual issues. In D. O'Hair & G. L. Kreps (Eds.), *Applied communication theory and research* (pp. 3-22). Hillsdale, NJ: Lawrence Erlbaum.

O'Hair, D., O'Hair, M., Southward, M., & Krayer, K. (1987). Patient compliance and physician communication. *Journal of Compliance in Health Care, 2*, 125-128.

Pettegrew, L. S. (1988). Theoretical plurality in health communication. In J. A. Anderson (Ed.), *Communication yearbook 11* (pp. 198-308). Newbury Park, CA: Sage.

Reardon, K. K. (1988). The role of persuasion in health promotion and disease prevention: Review and commentary. In J. A. Anderson (Ed.), *Communication yearbook 11* (pp. 277-297). Newbury Park, CA: Sage.

Starfield, B., Wray, C., Hess, K., Gross, R., Birk, P. S., & D'Lugoff, B. C. (1981). The influence of patient-practitioner agreement on outcome of care. *American Journal of Public Health, 71*(2), 127-132.

Stewart, M., & Roter, D. (Eds). (1989). *Communication with medical patients*. Newbury Park, CA: Sage.

Street, R. L., Jr., & Wiemann, J. M. (1987). Patients' satisfaction with physicians' interpersonal involvement, expressiveness, and dominance. In M. McLaughlin (Ed.), *Communication yearbook 10* (pp. 591-612). Beverly Hills, CA: Sage.

Street, R. L., Jr., & Wiemann, J. M. (1988). Differences in how physicians and patients perceive physicians' relational communication. *Southern Speech Communication Journal, 53*, 420-330.

Willson, P., & McNamara, J. R. (1982). How perceptions of a simulated physician-patient interaction influence intended satisfaction and compliance. *Social Science and Medicine, 16*, 1699-1704.