Dentist–patient communication: a review of relevant models

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A review of the literature on dental treatment was conducted and models presented of the doctor/dentist–patient relationship. These models are listed and divided into two subgroups, empirical and normative models. The models are scrutinized with focus on the dentist–patient communicative relationship exclusively. Different doctor/dentist–patient relationships are described. External factors influencing these relationships are defined. An analysis of dentist–patient communication is made, and a new model of dentist–patient communication is suggested, which states that what is done and what is said during dentist–patient encounters will have an impact on outcome. Three different purposes of dentist–patient communication are presented. The process of attaining these is discussed. It is concluded that a theory of communication is lacking in the dental context, and the need to develop a reliable and valid interaction analysis system for the patient–dentist communication is confirmed. ☐ *Analytical models; dentist–patient encounter; patient–provider interaction; purposes of communication*

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The aim of this paper is to review models of patient–provider communication, to evaluate the models with special concern for the dental context, to discuss the differences between medical and dental communication, and to finally suggest a new analytical framework for study of communication in dentistry.

Analytical models of patient–provider encounter

The initial meeting between a patient and a dentist is the beginning of a relationship that occurs within a framework determined by external factors (for example, laws, regulations) and odontologic tradition. Within this framework there is room for the development of interpersonal relations between parties not only consisting of a dentist and a patient but also between other members of the staff of a clinic. The characters of these relations are all important, as they determine the patient's overall potential for effective communication and the dentist's potential to understand the situation for effective treatment and care in the end (1, 2). Anything dentists and other members of the staff do or say influences the patients and thereby affects the information shared by the patients. Actions by the patients will consequently influence the dentists, including the information relayed by the dentists. The encounter will therefore start and continue as an interactive process (3), requiring input and response from several parties.

The complex reality of a clinical encounter and its compound image of incidents impinging on each other inhibits the prospects of adequate scientific modeling. Still, there are theoretical models of such encounters. They focus on interactions between humans in different contexts. The complexity of reality is simplified in these models, to make it possible to describe and understand it scientifically. The models give possibilities, however, to interpret clinical situations, to evaluate outcomes, and to search for obstacles to quality of care.

There are, however, few theoretical models specifically aimed at describing the communicative encounters between dentists and patients, dental nurses and patients, dental hygienists and patients, and so on. The focus of research has instead been on the encounter between physicians and patients. An ideal theoretical model for clinical interaction ought to be broad enough to include all clinical activities and yet have sufficient depth for specific problems and applicability to different populations and societies (4). It should therefore be possible to extrapolate the medical models to the dental context, despite possible differences between the two types of clinical relationships.

On this background, there are two questions: a) What different types of doctor/dentist–patient relationships are described? b) What external factors are said to influence these relationships? As to the second question, the main focus was to analyze the dentist–patient communication. The analysis was used to suggest a new model of dentist–patient communication.

Materials and methods

A literature survey was conducted at the Medical Library, Örebro County Council Hospital, Örebro, Sweden, by applying the Medline systems, Psychological Abstracts, and Sociological Abstracts. The survey covered the period from January 1990 to March

Table 1. Empirical models aimed at exploring and describing, not evaluating, the factors at play in the clinical situation

Medical context	Type	Author/year/reference no.
The Reciprocity Theory	Sociologic	Gouldner 1960 (100)
The Locus of Control Therapy	General human interaction	Rotter 1972 (101)
The Model of Self Efficacy	Psychologic	Bandura 1973 (102)
The Relational Communication Theory	General human interaction	Rogers et al. 1975 (103), O'Hair 1989 (104)
Social Exchange Theory	Sociologic	Emerson 1976 (100)
The Explanatory Model	Doctor–patient/sociologic	Kleinman 1980 (105)
Model of the Provider–Patient Communication Process	Physician–patient	Pendelton 1983 (6), Inui & Carter 1985 (70)
Nutrition Communication Model	Physician–patient	Gillespie 1987 (106)
Integrative Model	Psychologic	Rossmanith 1990 (107)
The Expectancy Theory	Physician–patient	Burgoon et al. 1991 (5)
The Semiotic Model	Physician–patient	Priel et al. 1991 (108)
The Systems Model of Clinical Preventive Care	Physician–patient	Walsh & McPhee 1992 (4)
The Power/Interaction Model of Interpersonal Influence	Sociologic	Raven 1992 (109)
The Integrative Model for Medical Consultation	Physician–patient	Fredrikson 1993 (7)
Dental context		
The Locus of Control Theory	Psychologic	Rotter 1975 (110), Ödman et al. 1984 (18)
The Health Belief Model	Psychologic	Rosenstock 1979 (119)
Ajzen Fishbein's theory of reasoned action	Psychologic	Hoogstraten et al. 1985 (15)
Self-Efficacy Theory	Psychologic	O'Leary 1985 (19), Wolfe et al. 1991 (20)

1994. The survey was computerized. The search words were provider–patient relation, doctor–patient relation, dentist–patient relation, dentist–patient interaction, dentist–patient communication, and patient satisfaction. The articles found were scrutinized for models of communication in the dental and the medical contexts. The reference lists of the selected articles were reviewed, and work dealing with this subject and published before 1990 was selected. References dealing with the same subject, published after 1990, are included in the list of references as they were noticed in the literature during writing.

The definitions of the concepts of *interaction*, *communication*, and *outcome*, as we use them in this text, are as follows: *Interaction* is a situation in which humans act on each other. An act towards someone is followed by an act/answer of any kind from someone receiving. *Communication* means exchange of information for some purpose(s), in a verbal or a non-verbal way. *Outcome* means the effect of any action during provider–patient sessions as assessed by the patients and providers.

Results

Models of patient–provider encounter

The review of the literature showed that there are two types of models, including definite values or not. The substance of the value-laden models is either prescription of a means of communication or criticism of presumedly negative modes of relationships. Consequently, a simple analytical division of the reviewed models is suggested, in which models can be considered either normative or empirical. Empirical models aim at exploring and describing, not at valuation, of factors at play in the clinical situation. These models do not usually have an application objective. Their goal is to understand the causal webs of the communicative situation of an encounter.

Empirical models of patient–provider encounter. In empirical models (Table 1), several features of providers and patients have been found which are proposed *to affect the process of encounters*. They are as follows: 1) Patient's prior experience of care. 2) Patient's objectives of visit. 3) Patient's expectations. 4) Type of problem. 5) Number of patient's concerns. 6) Provider's expectations. 7) Provider's prior knowledge of patient's concern. 8) Characteristics of provider's practice setting. 9) Patient and provider personality.

Several outcomes of the provider–patient encounter have also been suggested in these models and are usually linked to the communication process. They are 1) Patient knowledge. 2) Provider–patient congruence on problems, recommendations. 3) Patient satisfaction (with care, with treatment, with particular provider). 4) Patient compliance/adherence. 5) Resolution of patient concerns or symptoms.

For example, with a language-based theory of persuasion, called the expectancy theory, Burgoon et al. (5) show that when physicians deviate from expected strategies during an encounter, patient compliance increases.

Pendelton (6) considers both patient and provider characteristics in his model of communication and states that patient and provider processes are cyclic, reiterative, and interact only at the encounter (Fig. 1).

Frederikson (7) states that both physician and patient have a responsibility to make the consultation work. He expresses the doctor–patient relationship as a system of

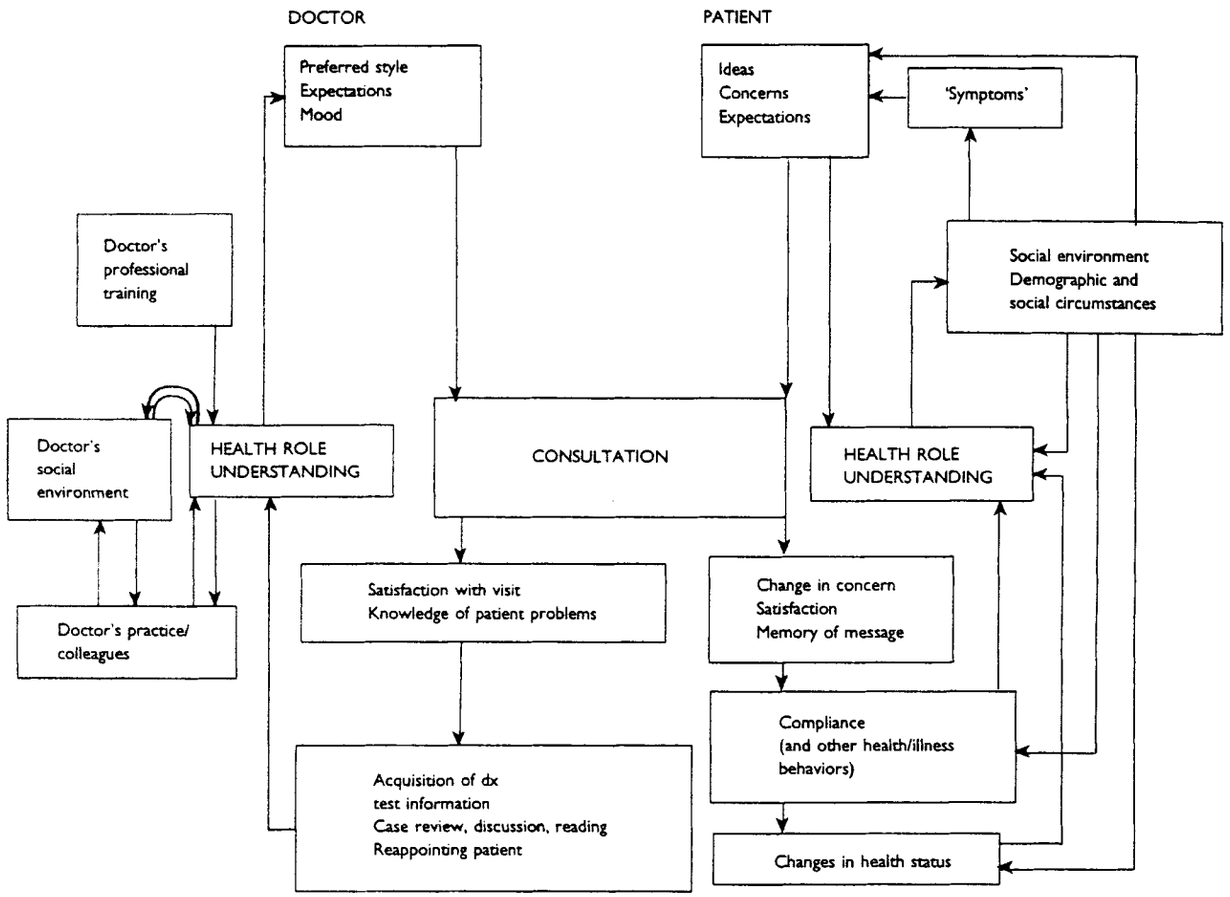

Fig. 1. Pendelton's empirical model of provider–patient communication (6). Provider and patient acting in a social and organizational context, bringing information and expectations to the encounter and emerging from this event to separately experience outcomes of the process.

mutual information exchange and shows the duality of the process of consultation in his model (Fig. 2).

In conclusion, the empirical models try to describe and analyze the relations between provider and patient as completely as possible. They do not evaluate the various components, nor do they produce any recommendations. That is rather the self-imposed task of normative models.

Normative models of patient–provider encounter. Normative models can be divided into two subcategories, biomedical models and biopsychosocial models (Table 2).

1. The biomedical model. With a reductionistic approach to health and disease the biomedical model examines health and disease only in terms of biologic etiology or in terms of deviations from what is considered normal (8). The provider plays a dominant role, whereas the patient is passive. Consequently, the view of communication built into the biomedical model will only be in the form of directions and information given to the patient by the doctor and very little the other way around. Patient compliance is the prominent problem.

This model has few defenders in the literature today, but it is a favorite adversary and contrast for most of the normative models. In their criticism of this general biomedical model, Szasz & Hollender (1) as early as in 1956 presented an array of models of doctor–patient interaction, describing encounters in which decisions and treatments are made without any active participation from the patient. The patient's autonomy is likely to become compromised, and a powerful critique against the biomedical model is reflected.

In four models presented by Roter & Hall (9) the doctor–patient relationship is described as a function of the control of the encounter (Table 3). The interactions of the models are described as four different archetypic doctor–patient relationships. The communication patterns between doctor and patient during these relationships differ to the extent of what the talk contains and how it is said. The models cover the biomedical model and the biopsychosocial model in four different ways: the paternalistic relationship, the consumeristic relationship, the mutual relationship, and the default

Table 2. Normative models evaluating the various components of the relationship, thus producing recommendations for the clinical encounters

Medical context	Type	Author/year/reference no.
The biomedical model	Physician–patient	Szasz & Hollender 1956 (1)
Model of Guidance-Cooperation	Physician–patient	Szasz & Hollender 1956 (1)
The Mutual Trust Model	Physician–patient	Szasz & Hollender 1956 (1), Smith & Pettergrew 1984 (8)
Guild Model	Physician–patient	Ozar 1984 (12)
The Paternalistic Model	Physician–patient	Emanuel & Emanuel 1992 (111)
The *Informative Model*	Physician–patient	Emanuel & Emanuel 1992 (111)
The Instrumental Model	Physician–patient	Emanuel & Emanuel 1992 (111)
The Paternalistic Relationship	Physician–patient	Roter & Hall 1992 (9)
The biopsychosocial model	Physician–patient	Engel 1980 (11)
Model of Activity and Passivity	Physician–patient	Szasz & Hollender 1956 (1)
Model of Participation	Physician–patient	Szasz & Hollender 1956 (1)
Commercial Model	Physician–patient	Ozar 1984 (12)
The Interactive Model	Physician–patient	Ozar 1984 (12)
Social Interaction Model	Physician–patient	Ben-Sira 1976 (112)
The PRECEDE Model	Physician–patient	Green 1987 (4)
Diffusion and Adoption Model	Psychologic	Orlandi 1987 (113)
The Friendship Model	Physician–patient	Illingworth 1988 (114)
The Feminist Health Care Model	Physician–patient	Foster 1989 (115)
Model of Participative Decision Making	Physician–patient	Ballard-Reisch 1990 (116)
Model of Emphatic Understanding	Physician–patient	Squier 1990 (32)
The Integrated Model of Patient Education	Physician–patient	Grueninger et al. 1990 (117)
The *Interpretive Model*	Physician–patient	Emanuel & Emanuel 1992 (111)
The Deliberative Model	Physician–patient	Emanuel & Emanuel 1992 (111)
The Relationship of Mutuality	Physician–patient	Roter & Hall 1992 (9)
The Verbal Exchange Theory	Physician–patient	Stiles & Putnam 1992 (118)
Commercial Model	Physician–patient	Ozar 1984 (12)
The Relationship of Consumerism	Physician–patient	Roter & Hall 1992 (9)
Dental context		
The biomedical model		
Dentist-Initiated Continuing Treatment	Dentist–patient	Coleman & Burton 1985 (21)
Third-Party-Initiated Consultations	Dentist–patient	Coleman & Burton 1985 (21)
The biopsychosocial model		
The Integrated Model of Preventive Health Behavior	Psychologic	Antonovsky & Kats 1970 (14)
Dentist-Initiated Check-up Consultations	Dentist–patient	Coleman & Burton 1985 (21)
Patient-Initiated Consultations	Dentist–patient	Coleman & Burton 1985 (21), Lissau et al. 1989 (16)
The Iatrosedative Model	Dentist–patient	Friedman et al. 1988 (24)
Model of Patient Compliance	Dentist–patient	Corah et al. 1988 (23)

relationship. The paternalistic relationship depicted by Roter & Hall, with a high level of doctor control and a low level of patient control, can be regarded as a variant of the biomedical model, also here with a critical stance.

2. *The biopsychosocial model.* Instead of the biomedical model there is the biopsychosocial model (10, 11). This model is often presented as better than the biomedical model. The role of the patient during this biopsychosocial encounter is an active one. The communication is an interaction and not only an action performed solely by the doctor. The patient's social context is explicitly included. The prominent problem becomes patient satisfaction with care, rather than patient compliance.

The differences between these two types of models can be understood as a shift from 'paternalism in care' to 'shared decision-making'. The doctors and patients are general equals in the decision-making process and regard themselves also as being equals in the communication process, as described in Model of Participation (1), Mutual Trust Model (8), Interactive Model (12) and Relationship of Mutuality (9).

In Relationship of Consumerism (9) and in the Commercial Model (12) the patient's autonomy is only partly compromised. The medical care is in these models regarded as a simple commodity for sale. The doctor is the producer of something the patient wants to consume. The encounter becomes the marketplace for negotiations about the entity for exchange and the price set in that entity. The doctor and patient will both compete to make the best bargain. Patient need will only play an indirect role as a determinant for the medical care offered. The patient's autonomy may therefore only partly be preserved, replaced by negotiation skill and purchasing power.

In the model The Relationship of Default (9) there is a total lack of control by both the doctor and the patient. This model is therefore characterized as neither biopsychosocial nor biomedical. It is a relationship of failed expectations and frustrated goals. It reflects a

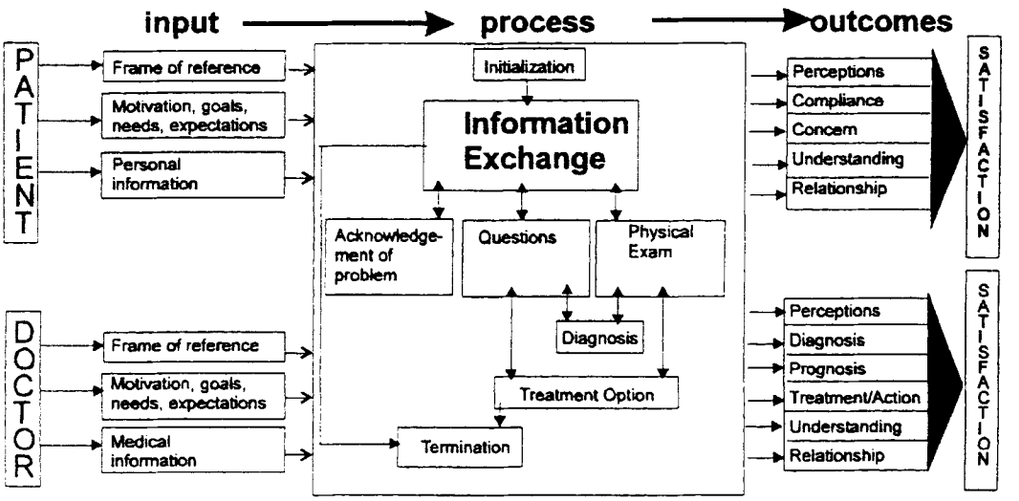

Fig. 2. Integrative Model for medical consultation (7). The doctor–patient relationship is expressed as a system of mutual information exchange. Essential is the feature of the balance between the doctor and the patient in terms of mutual influence and responsibility for the success of the process.

stagnant situation in which changed circumstances are not likely to be assimilated by the relationship. The patient might subsequently drop out of care and vanish. Most often the doctor will be unaware of the reasons for the loss of the patient.

The dental context

The significance of the dental context. Models focusing on the dental context are rare in the literature, and studies surveying the patient–dentist relationship mostly lack a theoretical framework. Comparability and interpretability of the studies are therefore limited (13). Some models have tested the prediction and understanding of dental attendance behavior (14–17). The results show that patient variables like sex, social conditions, pain tolerance, oral conditions, dental anxiety, long waiting time, type of appointment, and perceived economic barriers have a significant effect on dental attendance behavior. Other models have tested variables that influence preventive dental health care behaviors (18–20), such as the patient's judgment of his coping capabilities and the patient's personality scored by a locus of control scale. A few models attempt to describe the actual dentist–patient relationship, the variables affecting its characteristics, and eventually its impact on different outcome measures, such as satisfaction, compliance, knowledge, quality of care, dental health status, recall, and fear/anxiety reduction (16, 21–24).

Table 3. Models of doctor–patient relationships described as expressions of control and dynamics of negotiation (9)

	Physician control	
	Low	High
Patient control		
Low	Default	Paternalism
High	Consumerism	Mutuality

The patient–provider relationships in dentistry and in medicine are embedded in a context of social and economic factors (25, 26). Clinical settings in dentistry vary both within the same country and between countries, because of different dental care systems. The manner in which institutions are organized in these systems, and the actions of dentists and other members of the staff within institutions, should therefore be incorporated in models of dental clinical encounters.

It is now widely accepted that the provider–patient relationship, especially the psychosocial aspect, is a powerful factor affecting the overall outcome of an encounter (9, 27–34). Communication, one important aspect of this relationship, can help to elucidate the psychosocial interplay between dentist and patient during visits. Unfortunately, the role of communication during the encounter in determining the success of outcome in any form at different levels of the process of care-giving is not generally recognized. For example, the excellent quality of dental technology procedures is not always followed by high patient satisfaction with care (35–40). An explanation of this could be that both background variables *and* process variables are important for outcome (34, 38, 41). Patients might have difficulties in separating adequate from inadequate technical treatment. The patients' perception of relationships might impinge on outcome, without concerning high technical quality of treatment. Thus it is becoming generally acknowledged that there is no single 'outcome' of treatment. For every treatment encounter there are various outcomes, each of which may be

considered from several perspectives important to one or more of the participants in the encounter (42).

It has been suggested (43) that perceptions of the quality of a relationship are essentially perceptions about the quality of communication between relational partners. Even though the provider–patient relationship is, in part, a relation between humans in non-equal positions (44–46), it has been shown that medical and dental patients want information in a non-dominant manner (47). Patients also want to give information about themselves (6, 23, 30, 48–54). This is one of the central aspects of patient assessment of the quality of care delivered to them (55, 56).

There are, however important differences between the dental and the medical consultation. The functions of a medical consultation are, for example, to interview, to investigate, to present a diagnosis, to prescribe treatment, to review progress, and to give advice. It is, however, seldom a treatment session. The dental consultation, on the other hand, has all the above functions in *addition* to being the occasion when dental treatment actually is delivered. This makes a difference, both on the part of the dentist, who is under stress to perform an efficient treatment, and on the part of the patient, often expecting an unpleasant event.

The consultation procedures sometimes take place in a separate consulting room, as in the medical context, but more often the dental consultation takes place with the patient seated in the very chair where treatment is performed. This is a chair surrounded by the machinery and equipment usually used for treatment. Furthermore, the treatment is obviously exercised in the mouth, which not only is needed for verbal expressions but also is an area of the body that is extremely sensitive and highly charged with emotional significance (57). Only a minor part of the dentist's work is done outside the patient's mouth. While performing treatment in the mouth, the dentist focuses on the success of completing her immediately pressing work and not on maintaining verbal interactions with the patient (21), except for information-gaining purposes that will affect the immediate treatment procedures. These circumstances, in spite of slight differences between countries, are clearly obstacles for the communication process. At times, as in prosthetic oral rehabilitation, there are numerous long appointments for the same dentist–patient dyad, which might favor a communicative relationship. Thus, there is plenty of time to get to know one another.

Dentist–patient communication. Three purposes of communication during encounters in the medical context were identified in a recent review of the doctor–patient communication literature (34): the purpose of creating a good interpersonal relationship, the purpose of exchanging information, and the purpose of making treatment-related decisions. These three purposes could well be extrapolated to communication processes in the dental context.

1. The purpose of creating a good interpersonal relationship. Words are the basis of the communicative processes, and communication is said to be necessary to achieve a satisfactory dentist–patient relationship (9, 30, 58, 59).

It is, however, not at all clear what is meant by a satisfactory dentist–patient relationship. Some authors define it as a non-anxious relationship (51, 60, 61). Without a non-anxious relationship, neither satisfaction nor any treatment cooperation or compliance will occur (49, 62–67). Corah et al. (51) formulated a model of the dentist–patient relationship stating that satisfaction with a dentist can facilitate stress reduction, and stress reduction in turn promotes satisfaction. This mutual facilitation leads to greater compliance by patients. The dentist behaviors that were strongly associated with satisfaction pertained to good information—communication, for example, explained procedures, calm manner, encouraging questions, and dentist's empathy.

This type of relationship is somewhat similar to what Roter & Hall (9) describe as the relationship of mutuality in the context of medicine. A model similar to Roter's Model of Mutuality is the Model of Iatrosedation described by Friedman et al. (24). In this model of communication in the dental context, the sedative behavior and communication performed by the dentist makes the patient calm and trustful and more apt to feel satisfied with the treatment performed.

Providers' behaviors encourage patients to participate in the communication process. About half of the dentists surveyed in Florida, USA, reported patient losses due to poor interpersonal relations (68). There may be a mutual selection process at work during dentist–patient interactions. Dentists and patients tend to seek each other out as a practice develops. Dentists feel more comfortable with patients supporting their professional style, and patients may feel more comfortable with dentists who view patients as holistic persons. Under such circumstances a mutual reinforcement of existing habits occurs (50, 69). A satisfactory interpersonal relationship may develop. This could be a plausible development of a relationship in prosthetic dentistry, in which there are numerous encounters with the same participants. An unsatisfactory interpersonal relationship, on the other hand, may also develop. If this happens during an extensive rehabilitation, as often in prosthetic dentistry, with almost no possibilities for the patient ending the relationship, it might seriously impinge on outcome.

2. The purpose of exchanging information. The purpose of exchanging information in a patient–provider relation (70, 71) is to explore each other mentally, making it possible to establish diagnosis and treatment plans and to motivate behaviors that increase health. Dentists need information from the patients (72) to find differences in expectations and preferences for the type of relationship the two are about to enter. These differences, if they remain, can negatively affect outcome (56). The patients need to understand and to

be understood (73). It is recognized that 'authoritarian' dentists have a fixed notion about the best treatment and do not seem interested in the patient's perception of his or her dental problem (74).

For example, esthetic issues in dentistry, abundant in prosthodontics, are very complex and frequently confounded by considerations related to health, function, materials, and techniques. While comfort and function are achieved with relative ease, the problem of making restorations to harmonize with adjacent teeth has to be thoroughly discussed with regard to patient expectations and preferences. All actions that facilitate communication processes in such situations should be of importance for outcome (42, 75).

3. The purpose of making treatment-related decisions. To reach a mutual understanding of the nature of the problem and its solutions, a dynamic communication during dental visits should take place. The drift toward shared decision-making, as mentioned above, is meant to improve outcomes like satisfaction, cooperation, and compliance.

The principles of shared decision-making are, in fact, stipulated in Swedish social and health law (76). A paragraph of this law stipulates that care and treatment shall, as far as possible, be designed and performed in cooperation with the patient. The extent to which shared decision-making is practiced by Swedish dentists today is not really known. Half of the complaints put forward by patients during 1947–83 to the Swedish Official Malpractice Committee (77) were clearly due to shortcomings in the decision-making process between dentists and patients. These complaints were errors of management/performance of treatment, deficiencies of technical and esthetic quality, and diagnosis errors.

In summary, there are at least three different purposes of patient–provider communication also in dentistry: the purposes of creating a good interpersonal relationship, of exchanging information, and of making treatment-related decisions. The process to attain these should be further discussed. This is done in the following section.

Analysis of dentist–patient communication

There are few systematic analyses of patient and dentist features that affect communication behavior in a dental context (53, 67, 78, 79). In a study using audiotaped recordings of orthodontic consulting practices it was found that patient communication differed with the personality of the dentist.

There are some reports of different types of dentist–patient relationships and their features (21, 79). Research has also dealt with patients' evaluation of the dentists' characteristics (50, 80–82) such as the dentists' technical competence, communication, and interpersonal skills (23), especially with regard to reducing patient anxiety (69), and how this affects outcome measures like satisfaction, cooperation, and compliance (49, 60, 62, 64–67). Some work has focused on the congruence of patients' and dentists' perception of the relationship and its implication for patient satisfaction (56).

In an experimental study of the dentist–patient relationship (49) there was a special focus on the communicative interaction and its implications for patient satisfaction. Patients rated the dentists' behavior on a rating scale. Dentists who interacted with the patients rated higher than dentists who did not. The scale used in that study was especially developed for the study and described in an earlier article (83). The time the dentist spent with the patient was about the same for the interactive and non-interactive conditions. The interactive and satisfactory relationship resulted in more positive feelings about the dentist by the patient. Table 4 shows the content of an interactive consultation as described in that study (49).

There are studies concerning dentists' view of their patients (81, 82) with regard to patient compliance, tractability, and interpersonal responsiveness (47). The dentists preferred compliant and tractable patients. It has also been found that dentists' perceptions of their patients were markedly similar to each other and to the perceptions other professional helpers have of their patients (84, 85). It was concluded that this concurrence of perceptions reflects similar concerns about patients, in particular likability, manageability, and prognosis.

All this has, however, not clarified the picture of the dentist–patient relationship as an interactive relationship created by dynamic communication behaviors of patients and dentists. The literature has dealt mostly with patient features influencing outcome and very little with dentist features. Because of the reciprocal nature of communication in the context, attributes of dentists are probably as important for the development of communication as patients' attributes.

Dentist factors found in the literature of relevance for communication with patients are primarily competence (measured as years in active profession) (86) and personality (51, 81, 82). Patient features found to be relevant for the communication process are gender (87), age (88–90), previous dental experience (62), and personality (36, 47, 81, 91–94). If extrapolated from the literature concerning medical encounters, provider factors like gender (72, 89, 95) and sociodemographic

Table 4. The Interactive Consultation (50)

Dentist welcomes patient and introduces self
Dentist asks patient to sit in the dental chair
Dentist chats about a non-dental topic
Dentist informs patient about the treatment
Dentist puts on mask, washes hands, and gives injection while having general conversation
During treatment dentist continually asks how patient feels
After treatment a short neutral conversation takes place
Dentist says good-bye to the patient

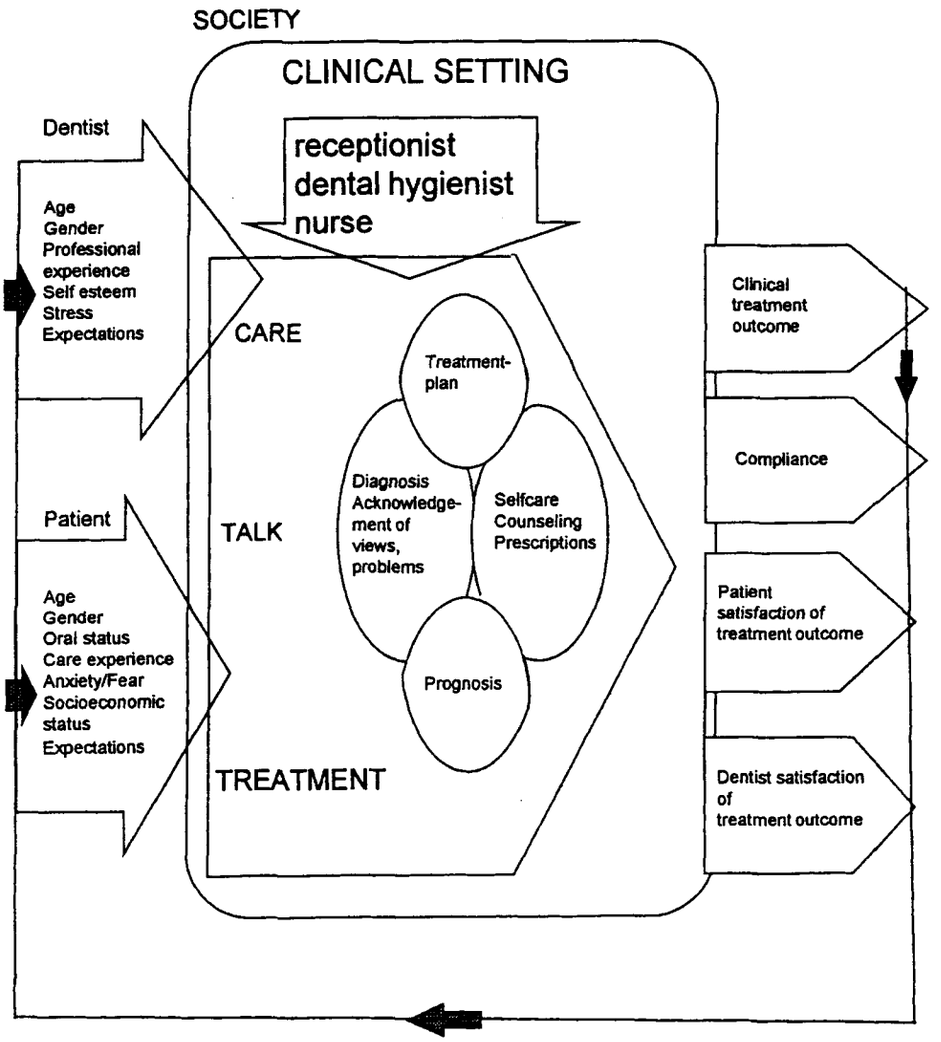

Fig. 3. A model for encounters in dentistry.

characteristics (6, 25, 96, 97) should also be important factors for the communicative relationship.

However, it is generally unknown how, and to what extent, these factors and features are causative in the development of a good dentist–patient relationship, because there is no systematic analysis considering methods of identification, categorization, and quantification of the factors.

Suggestion for a new model

A theory of communication is lacking in the dental context, making it difficult to formulate an empirical model of the complex dentist–patient relationship to predict and prevent bad outcome. There is not much evidence of causal relationships in the dental context concerning patient or dentist features that affect the communication process or about process characteristics or outcome. Extrapolating from the medical context, it is possible to sketch a model for encounters in dentistry overlooking the differences between contexts (Fig. 3). The model states that what is said and what is done during dental encounters will have an impact on outcome. Dentist and patient contribute equally to the ongoing process and to outcome. It is not possible yet to determine the relative weight of the two partners in the process. The purposes of communication during the encounter are defined throughout ongoing treatment sessions. This is the main difference from the medical context. The overall outcome can be characterized as treatment quality of dental care and can be divided into several subgroups.

Discussion and conclusion

The most important goal must be to establish a systematic theory of dentist–patient communication. Such a theory should relate background, process, and outcome variables and lead to hypotheses about these relations.

To study process variables in the medical context (34), communication researchers have used several different interactional analysis systems that are of high reliability (33). The choice and characteristics of an interactional analysis system are critical to future research findings (6, 70). The lack of an appropriate interaction analysis system of communication is apparent in dentistry.

One of the interactional analysis systems used both in medical contexts and in other contexts is the Roter Interactional Analysis System (RIAS). This method is extremely well documented and has the largest existing comparative material. It captures both the affective and the instrumental content of the communication and, therefore, makes it suitable for assessing the communication process as an intervening variable for outcome measures.

The technical treatment outcome of dentistry can be analyzed with well-validated methods (98, 99). The process itself and the patients' view of the treatment outcome cannot as yet be determined. Still, the two outcomes comprise two different aspects of the quality of dental treatment.

The lack of measurement instruments for the process and the subjective treatment outcome makes it imperative that the first step will be to develop a reliable and valid interactional analysis system for the dentist–patient relationship. This would make it possible to analyze the intervening communication process to understand more of the complex implications of the quality of dental treatment.

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