

DENTIST-PATIENT COMMUNICATION: HOW DO PATIENTS MAKE SENSE OF
ORAL HEALTH INFORMATION AND TRANSLATE IT INTO ACTION?

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Purpose: Patient-provider communication has been studied extensively in the last two decades, and many researchers have confirmed the importance of communication between patient and provider in medical contexts. In spite of increased research in patient-provider communication in dentistry, dental care providers still report that patients often do not accurately follow oral health recommendations. Thus, there is the need for additional study on how patients make sense of the oral health information they receive and how they translate that information into action. This study aimed to obtain insight into how dental care patients perceive and make sense of the information they receive from their dentist and how they translate that information into action.

Methods: 16 patients and 8 dentists from Indiana School of Dentistry's (IUSD) Graduate Prosthodontic Clinic in Indianapolis, Indiana were included. Two in-depth interviews, one immediately following the dental visit and one 7-10 days later, were conducted with the patients, and one short interview was conducted with each patient's dental care provider. Interviews were audio taped and transcribed.

Results: The results show both patients and providers perceived the interaction during consultation positively. The majority of patients were able to accurately recall information they received from their dentists and made sense of new information through

the lens of their previous experiences. Four additional factors that explain patients' adherence with health advice were also found in addition to the previous studies.

Conclusions: Successful dentist-patient interaction could be thought of as a match between what dentists think patients need to know, what patients think they want/need to know, and what patients actually know. Thus, some barriers that can keep dentists and patients from reaching information equilibrium are discussed. The study concludes by offering practical and theoretical implications.

Keywords: Communication; Patient Memory; Patient Perception; Dental Care Provider; Patient-Provider Interactions; Sensemaking

Elizabeth Goering, PhD

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Introduction

Communication, one important aspect of patient and provider interaction, can help to clarify the interplay between patient and provider during visits. Patient-provider communication has been studied most extensively in the last two decades, and many researchers have confirmed the importance of communication between patient and provider in medical contexts (Kalet et al., 2004; Lipkin, Putnam, & Lazare, 1995; Steward, 1995). Over the past 40 years, patients have been encouraged to participate in decisions that will affect their own treatments and care. Patients have become better educated and informed about health care issues (Brom et al., 2014).

Interest in patient-provider interactions in the dentistry context has grown, as the dentist-patient relationship is recognized as a crucial factor that has an influence on the viability of the average dental treatment. Many benefits from effective therapeutic communication in dentistry (e.g. improved care outcomes and reduced patient anxiety) and additional advantages such as improved patient adherence to recommendations and higher patient-rated clinical proficiency have also been identified (Hottel & Hardigan, 2005; Yoshida, Milgrom, & Coldwell, 2002). In dental schools, communication classes have been developed for dental students, as they should be educated about the importance of communication skills with patients. Thus, the need to teach communication skills to dental students is integrated into the General Dental Council guidance to dental schools, and tutors are required to ensure that students are sufficiently trained in communication skills (Carey, Madill, & Manogue, 2010; General Dental Council, 1997; Theaker, Kay, & Gill, 2000).

It is now well established that communication skills are important for health care providers. Hence, providers have been given communication lessons so they would be able to provide quality care to their patients. However, it's been found that general practitioners and patients' perceptions regarding consultation content were inconsistent 60% of the time (Eagerberg, Kragstrup, Stovring, & Rasmussen, 1999). In other words, only 40% of consultation content was described consistently by practitioners and patients. Thus, this would suggest that the information that health care professionals believe they have communicated might not be the same as what patients believe they have heard. Similar information has been found from dental practitioners as they still report that patient's memory for post-treatment information is problematic (Misra et al., 2013). The study has also discovered that the quantity of information recalled by patients after consultation with dentists is limited (Misra et al., 2013). Consequently, patients were not able to follow through on recommended dental care. Part of the problem might be the way dentists' recommendations were perceived and understood. Thus, there is a need to study dentist-patient interaction further. In addition, another problem may be that traditionally the focus has been on how messages are delivered by health care providers. Shifting the focus to how messages are processed by patients may have valuable insight into dentist-patient interaction.

This study therefore seeks to understand the nature of patient-provider interactions focusing on how patients translate/transform information they received from their dentist into action and the ways in which these interactions influence the comprehension of dental services, with the aim of providing recommendations for optimizing patient-provider relations and dental services.

Literature Review and Development of Research Questions

Health communication provides the foundation of provider and patient interaction (Sparks & Villagran, 2010). In 2000, the US Department of Health and Human Services defined health communication as follows:

The art and technique of informing, influencing, and motivating the individual, institutional, and public audiences about important health issues. The scope of health communication includes disease prevention, health promotion, health care policy, and the business of health care as well as enhancement of the quality of life and health of individuals within the community (US Department of Health and Human Services, 2000).

In the past two decades, interest in health communication has grown, and numerous studies have confirmed the importance of communication between patient and provider (Kalet et al., 2004; Lipkin et al., 1995; Steward, 1995). The importance of effective interactions between health care providers and patients are widely documented as they play an important role in determining the health services. Patient-provider interactions have been theorized with a range of theoretical models developed over time from the traditional paternalistic or biomedical perspective of care to the ‘patient-centered’ approach (Blanchard, Labrecque, Ruckdeschel, & Blenhard, 1988; Gattellari, Butow, & Tattersall, 2001; Hack, Degner, & Dyck, 1994). More recently, the philosophy of patient-centered care has been implemented in present medical practice. This reflects a growing perception of the importance of providing high quality health care services.

The importance of patient-provider communication in health care contexts

Patient-provider communication refers to the act of sharing information and establishing relationships between health care providers and patients (Bylund, Peterson, & Cameron, 2012). Effective communication implies that the patient and provider have

developed a partnership and the patient has been fully educated. Thus, successful medical encounters require effective communication between the patients and the provider.

According to the Institute for Healthcare Communication (2011), there is a strong positive relationship between a provider's communication skills and a patient's capacity to follow through with medical recommendations and adopt preventive health behaviors. Therefore, patients' perceptions of the quality of the healthcare they received are highly dependent on the quality of their interactions with their healthcare clinician and team (Clark, 2003; Wanzer, Booth-Bitterfield, & Gruber, 2004).

Moreover, broad evidence claims that good interpersonal communication between patients and medical specialists causes better therapeutic outcomes, a better patient-provider relationship, a higher satisfaction amongst patients and providers, a higher patient adherence to medical advice, and fewer errors in treatment (Haak, Rosenbohm, Koerfer, Obliers, & Wicht 2008; Langewitz, Eich, Kiss, & Wossmer, 1998; Ramirez, Graham, Richards, Cull, & Gregory, 1996). The interaction between patient and provider directly influences the accuracy of the diagnosis. Consequently, having clear communication can forge a therapeutic alliance between patient and provider and that will determine the patient's adherence to treatment plans, medication regimens, and changes in lifestyle (Brody, Miller, Lerman, Smith, & Caputo, 1989; DiMatteo & Sherbourne et al., 1993). A wealth of research data supports the benefits of effective communication and health outcomes for patients and providers. The connection between patient and his or her provider can ultimately improve health mediated through participation in care, adherence to treatment, and patient self-management (Duffy,

Gordon, Whelan, Cole-Kelly & Frankel, 2004; Heisler, Bouknight, Hayward, Smith, & Kerr, 2002).

Patient-provider communication in dentistry

Sondell & Söderfeldt (1997) have reviewed models of patient-provider communication, evaluated the models with special concern for the dental context, and discussed the differences between dental and medical communication. They found that words are the basis of the communicative processes, and communication is said to be necessary to achieve a satisfactory dentist-patient relationship. Moreover, since most dental conditions are not life-threatening, with the exception of oral neoplasms (Reisine, 1988), people would not expect self-assessments of oral health to be related to mortality. Consequently, effective communication skills become crucial for dental practitioners in order to encourage patients to follow their recommendations. A strong dentist-patient relationship then becomes essential because it influences patient care outcomes such as treatment compliance (Kirshner, 2003), patient satisfaction, trust and adherence to treatment (Rozier, Horowitz, & Podschun, 2011).

While some studies have explored patient-provider interaction in dental care, many of them have only focused on dentists' communication skills while there is much less research focused on patients' communication skills. Therefore, the lack of an appropriate interaction analysis system of communication is apparent in dentistry. This seems to be consistent to many general patient-provider communication studies in which the focus of patients' communication skills is still limited. Thus, a better understanding of patients' communication processes could contribute to an expanded understanding of general patient-provider communication.

Although dentist-patient communication is important, models of clinical dental communication are almost non-existent and a theory of communication is still lacking in the dental context so researchers have drawn upon medicine for models (Haak et al., 2008; Schirmer et al., 2005; Sondell & Söderfeldt, 1997). The medical model is often applied to the dental environment, however, oral health professionals more frequently focus upon clinical treatments and the need to help patients cope with fear and anxiety (Corah, O'Shea, & Ayer, 1985; Corah, O'Shea, Pace, & Seyrek, 1984; Oosterink, de Jongh, & Hoogstraten, 2009).

According to the Canadian Dental Association (2010), the Ipsos Reid public opinion survey of dentists and dental profession summarized that the present reputation of dentists is “resting on precarious levels of trust and skepticism” and demonstrated that oral health care providers are not communicating adequately with their “consumers” (i.e., patients/clients). Moreover, Logan (1997) found that patients want to be involved and educated about treatment options and want oral health professionals who will listen, pay attention to their concerns, and treat them as individuals. Patients have indicated that they prefer a collaborative role for making decisions and sharing responsibility equally. However, their lack of knowledge about dentistry and lack of trust in dentists often caused them to take on a passive role (Chapple, Shah, Caress, & Kay, 2003).

Although the value of effective communication in provider-patient interaction is generally recognized and many researchers have identified keys for practicing clinicians to increase their competence (Asadoorian & Batty, 2005; Asadoorian, Schönwetter, & Lavigne, 2011; Carr & Carmody, 2006; Eva & Regehr, 2008), relatively few of the studies have sought feedback from patients (Wener, Schönwetter & Mazurat, 2011).

Although communication skills for practicing oral health practitioners have been studied extensively (Anderson, Thomas, & Phillips, 2005; Hurst, Prescott-Clements, & Rennie, 2004; Okullo, Astrom, & Haugejorden, 2004; Schouten, Eijkman, & Hoogstraten, 2003), relatively little is known about patient evaluations of dentists' communication. In addition, those patient satisfaction studies that have been completed are mostly related to technical competence, interpersonal factors, convenience, costs, and facilities (Newsome & Wright, 1999a; Newsome & Wright, 1999b); however, there is less evidence from a communication perspective. Thus, attending to patient evaluations of dentists' communication and comparing patients' perceptions with the perceptions of dental care providers may provide useful insights that could improve dentist-patient interaction. Therefore, two research questions arose:

RQ1a: What are the patients' perceptions about their interactions with their dental care providers?

RQ1b: What are the dental care providers' perceptions about their interactions with their patients?

Patients' sensemaking skills

In addition to analyzing the communication between dentists and patients from the perspectives of the patients, knowing how patients make sense of information they received is also important. Sensemaking is a theoretical perspective that may be useful in explaining and understanding how patients interpret and make sense of the information

they received from health care providers. This theory has been used in a variety of different areas, including medical contexts.

Sensemaking Theory. Sensemaking refers to the process through which people interpret meaning from experience. It was first applied to human-computer interaction by Palo Alto Research Center Incorporated (PARC) researchers Russell, Stefik, Oirolli, and Card (1993). Weick (1995) later applied this concept in communication studies to explain how people make sense of information they got within the organizational environment. Sensemaking literally means “the making of sense” (Weick, 1995, p.4) which involves the ongoing retrospective development of plausible images that rationalize what people are doing (Weick, Sutcliffe, & Obstfeld, 2005). A central theme in both organizing and sensemaking is that people organize to make sense of equivocal inputs and enact this sense back into the world to make that world more orderly (Weick et al. 2005).

Benner (1994) has applied basic moments in the process of sensemaking to the experiences of a nurse practitioner. In medical contexts, sensemaking is about labeling and categorizing to stabilize the streaming of experience. The key phrase is “functional deployment” which means imposing diagnostic labels that suggest a plausible treatment (Weick et al. 2005, p. 88). Medical sensemaking is distributed across the healthcare system, and to a great degree, it is a matter of thinking that is acted out conversationally. Providers and patients, like everyone else, make sense by acting thoughtfully, which means they simultaneously interpret their knowledge.

Communication is a central component of sensemaking and organizing. Taylor & Van Every (2000) compose the relation between communication and sensemaking as following:

We see communication as an ongoing process of making sense of the circumstances in which people collectively find ourselves and of the events that affect them. The sensemaking, to the extent that it involves communication, takes place in interactive talk and draws on the resources of language in order to formulate and exchange through talk symbolically encoded representations of these circumstances. As this occurs, a situation is talked into existence and the basis is laid for action to deal with it (p.58).

Sensemaking is not about truth and getting it right. Instead, it is about continued redrafting of an emerging story so that it becomes more comprehensive and incorporates more of the observed data. In addition, sensemaking is by nature a transactional process; the patient is making sense from information they got while the health care provider is doing the same. However, there is less evidence about sensemaking in the dental care context. Previous studies of dental care patients have rarely involved an analysis of sensemaking; however it is apparent that patients' sensemaking behaviors will provide key information related to the outcomes of their oral health. Hence, it is important to understand how patients make sense of health information they received from their dental care providers. Subsequently, the second research question asked:

RQ2a: How do patients make sense of health information they received from dental care providers?

Consistency of information. Although some research has explored sensemaking in health-related contexts, relatively little work has examined the consistency of sensemaking between patients and health care providers. Kessels's (2003) study showed that patients forget 40%-80% of information they received from their consultation. Similar to Kriwanek, Armbruster, Beckerhinn, Blauensteier, & Gschwantler's (1998)

study, 70% of patients who had recently undergone laparoscopic surgery were unable to recall a risk factor related with the procedure. In dentistry, there is also limited evidence about the quantity of information recalled after consultation (Misra et al., 2013).

For example, 40% of oral surgery patients could not remember receiving written postoperative instructions (Blinder, Rotenburg, Peleg, & Taicher, 2001). Similarly, during a study examining orthodontic patients' information retention, around 70% of information that patients got could not be recalled after 10 days (Witt & Bartsch, 1993). Effective communication depends not only on observable behaviors of the health professional but also on behaviors and perceptions of the patients (Schirmer et al., 2005).

Although there's been a use of information technologies (e.g. electronic health records) to facilitate communication between dental care providers and dental patients, it appears to cause patients a certain level of frustration and distraction (Asan, Ye, & Acharya, 2013). Additionally, their findings also indicated that dental care providers didn't receive education in best practices for integrating electronic health records use effectively with their overall communication skills. These findings have implications for the importance of communication between patients and providers following a dental consultation. If the communication is not clear and patients fail to recall basic information given at consultation, their efforts to adhere will also be undermined.

It is also important to see whether or not patients will describe health information differently from dental care providers. Thus, comparing the information that has been made sense of by patients with what the patients had actually been told by dental care providers may provide useful insights that could help us understand patients' sensemaking skills better. This leads to another research question:

RQ2b: To what degree does the sense made by patients of dental instructions given by their dental care provider match what dental care providers think they actually told their patients?

Translating health information into behavior

As previously mentioned, communication between provider and patient has been used for sharing information and establishing relationships between providers and their patients. Patient care outcomes such as treatment compliance, patient satisfaction, trust, and adherence to treatment are all influenced by a strong dentist-patient relationship (Kirshner, 2003; Rozier, Horowitz, & Podschun, 2011). Consequently, knowing patient's perceptions of their interaction with their dental care providers and understanding how they make sense of information they received could be a crucial factor in providing the most appropriate strategy of delivering health care information to a patient. Moreover, understanding how patients respond behaviorally to that information could also be an important aspect of reaching a successful treatment for a particular patient.

Patient noncompliance. Patient noncompliance refers to “nonadherence (or only partial adherence) to health-related behaviors and is a problem for medical care and dental care alike” (Collins, 2008). Many studies concerning patient noncompliance have been produced in recent years. These studies have shown that noncompliance has been affecting all medical specialties, leading to wasted resources, frustrated doctors and delayed healing (Dallas, 2015). Prescription Drug Monitoring Report (2012) shows that over 60% of Americans don't follow doctors' orders in taking prescription medicines. Moreover, Crowley, Grubber, Olsen, and Bosworth's (2013) study also reports that

around 50% of patients treated for chronic disease fail to take medicine or follow dietary guidelines as prescribed.

In dentistry, a lack of patient compliance is one of the major problems in dental treatment and often the clinicians have to deal with this issue almost daily (Papadopoulos, 2006). This could result in a longer treatment time and frustration for both patients and dental care providers. Thus, compliance or cooperation of the patients is a major factor for a successful treatment and this is a reason why lots of efforts have been directed over years to developing noncompliance technique (Papadopoulos, 2006).

Factors affecting compliance in oral health behavior. According to Bird (2003), noncompliance may be the result of internal factors (i.e. self) or external factors such as the community or providers. Numerous studies have explored techniques and the factors that affect health behavior due to oral health is one of the overall health aspects that can affect functioning and the overall feeling of health. Since the mouth and teeth are important parts of the whole person, it is possible that when they restrict functioning and form discomfort, they also negatively affect self-rated general health. Additionally, oral health problems can result in pain and lead to problems in daily life activities such as eating, communication, appearance, and consequently to embarrassment which can lead to social problems and low self-esteem (Cushing, Sheiham, & Maizels, 1985; Slade & Spencer, 1993).

Benyamini, Leventhal, & Leventhal (2004) conducted a research of elderly people to assess the extent to which oral health plays a unique role in elderly people's perceptions of general health, self-esteem, and quality of life. They found that both self-rated health (SRH) and self-rated oral health (SROH) significantly affected variance in

concurrent ratings of self-esteem and life satisfaction. The results also indicated that SROH has a unique role in people's perceptions of their overall health that is not fully apprehended by SRH. By means of this, human self-esteem, life satisfaction, and overall health are partially generated from good oral hygiene and oral health. In young adults, oral health behavior is known to be associated with various factors such as socioeconomic status, race, urbanization, and gender (Atchison et al., 1993; Keogh & Linden, 1991; Ronis, Lang, Farghaly, & Passow, 1993).

Not only internal factors could affect health behavior, external factors such as community and family support are also necessary. External factors can also include poor communication or involvement by providers (Deinzer et al., 2005). Thus, it is being understand that the dental professional can be in a position to help improve individual patient's compliance (Collins, 2008). In accordance with WHO, in order to strengthen the positive factors for health both at the individual and community level, social and competence support should be included. These two types of supports will be able to enabling individuals and groups to identify their expectations and goals, to satisfy their needs, to develop their knowledge and competence, and to be actively involved in cooperation with dental-care professional. Hence, they will willingly initiate healthy activities for their own well-being (WHO, 1986).

Understanding patients' health behaviors. A number of health behavioral theories have been developed to predict, explain, and change health behaviors. However, there is little theory-based research on the role of motivation in patient adherence to dental health care programs and to the prevention of oral disease (Halvari, Halvari,

Bjørnebekk, & Deci, 2010). The literature only found Ramsey (2000), who applied the control theory of self-regulation (Carver & Scheier, 1998) to oral self-care behavior.

A recent field research of Halvari and Halvari (2006) in a clinical setting presented that, in comparison to standard dental care, an autonomy-supportive informational intervention increased patient's perceived dental competence and autonomous motivation for dental treatment over a 7-month period, decreased plaque and gingivitis over the same period, and resulted in a better dental self-care behavior and more positive dental health attitudes and affect at the end of the time period.

Additionally, Halvari et al. (2010) claimed that satisfaction of psychological needs was related to behaviors conducive to dental health (e.g. flossing) as well as attendance at dental clinics. Subsequently, Halvari, Halvari, Bjørnebekk, and Deci (2013) have tested a self-determination theory (SDT) process model of oral health and subjective dental well-being and found that social-contextual and motivation variables work well in testing an oral health and dental well-being model. Their study also shows patients' perceptions of supportive dental professionals at clinic were positively associated with patients' psychological needs satisfaction in treatment. Therefore, what happens to patients in treatment may substantially increase their motivation for dental treatment and strongly affect their perceived health and well-being.

Ley model of patient compliance. Although theories have not been developed that explain adherence specific to dental and oral health, Ley's model of patient health behavior seems particularly appropriate for this study. Ley (1985) proposed interesting information about adherence with health advice which can provide a better understanding about patient' health behavior. This model explained that adherence with health advice is

a function of three patient-related factors: satisfaction, understanding, and memory. Specially, patient understanding and memory of the consultation have direct effects on adherence with medical advice but indirect effects on patient satisfaction. Although the model is generally used for explaining individual's recall of medical advice and their understanding of the content of a consultation, other research has found "adherence" (see Figure 1) also affects patients' health behaviors, dental practitioners, and treatments (Papadopoulos, 2006). Thus, using this model might be able to provide a better understanding on how patients translate information they received into an actual oral health behavior.

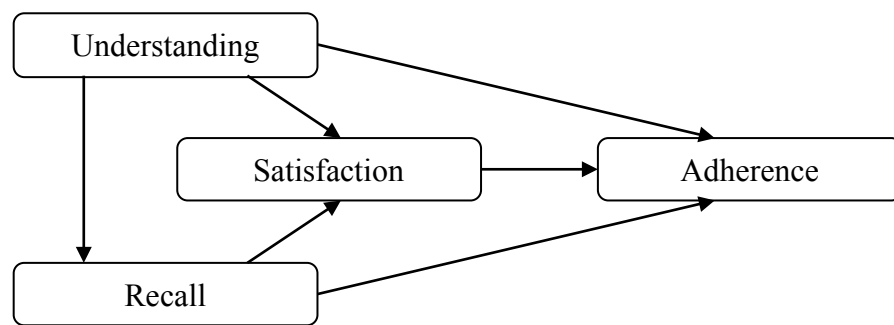


Figure 1 Overview of Ley's model on the interactions between patient-related factors and therapy adherence (Ley, 1988).

To our knowledge, very little research has revealed a similar study in which investigators examined the relationships between dental care providers (including dentists, dental hygienists and dental assistants) and their patients, how patients translate the information they received into an action, and how that process could affect dentist-patient interaction. Therefore, this study was conducted to explore the perceptions that patients have of the interaction they had with their dental care provider during visits, how patients make sense of health information they received from their providers, and how

patients translate the recommendations they were given related to oral health into actual behavior.

In order to understand how patients translate the health information they received into action, it is necessary to investigate factors associated with the oral health behavior of the patients. Therefore two research questions arose:

RQ3a: How do patients translate the health information received from dental care providers into action?

RQ3b: What are the factors that motivated patients to take an action?

Methodology

This study focused on communication between dentists and patients particularly on how patients perceive, make sense of, and respond to information they received from dental care providers during clinical consultation. This study used a qualitative research design, specifically research interviews. According to Targum (2011) conducting qualitative research will help researcher gather information and facts, learn about meanings, emotions, experiences (Weiss, 1994), and elicit stories (Birch & Miller, 2000) that cannot easily be observed (Baxter & Babbie, 2003). Therefore, we chose to conduct interviews.

Participants

This study used a qualitative research design consisting of interviews with patients at Indiana School of Dentistry's (IUSD) Graduate Prosthodontic Clinic in Indianapolis, Indiana, and their dental care providers. The patient participants were, English-speaking individuals over the age of 18 who had previous dental visits at the clinic, who were scheduled to have at least one additional visit in the future, and who were not in pain/discomfort or any condition that would lead to difficulty talking.

A total of sixteen patients who met the study criteria participated in the study, and all identified their current location as being in Indiana, U.S.A. The majority of patients were white female at the age of 50 or higher (see Table 1).

Table 1 Demographic information of participants (patients)

Participants	16
Gender	
Men	6
Women	10
Age range	
42-49	1

≥50	15
Ethnicity	
White	13
Asian	2
African American	1
Previous Clinic Visits Prior to Study Onset	
1-3	6
4-6	5
7-10	2
≥11	3

A total of eight dental care providers of IUSD’s Graduate Prosthodontic program participated in the study and multiple ethnicities were represented (see Table 2). The first year residents were not able to participate in the study because they were not yet allowed to practice clinical work.

Table 2 Demographic information of participants (dental care providers)

Participants	8
Gender	
Men	7
Women	1
Ethnicity	
Asian	4
Arab	3
White	1
Residency year	
2 nd Year	4
3 rd Year	3
4 th Year	1

Data Collection

The interviews were conducted to gain an understanding of how patients perceive, make sense of, and respond to information they have generally received from dental care providers during clinical consultation.

Prior to the interviews, a recruitment of participants was carried out. A research summary (Appendix A) was sent to the Graduate Prosthodontic Program Director of IU School of Dentistry to ask for study permission (i.e., access to graduate prosthodontic residents and patients, and permission to conduct interviews in the clinic area). Then, two meetings with the program director were later arranged; first, to get study permission and second, to review the research design. In addition, a meeting with IUSD's compliance and privacy officer was arranged to review Health Insurance Portability and Accountability Act (HIPAA) rules and researcher regulations toward the patients. When the approval from the program director was received, a 15-minute presentation for graduate prosthodontic residents to present details of the study and distribute a recruitment letter (Appendix B) was carried out. The next day, the residents who were participating in the study were observed. Then, their patients were invited to participate by the residents.

The research consisted of three individual interviews of each patient/provider pair; two interviews were conducted, which are *a post-consultation interview* and *a follow-up interview* with each patient and another one separate short interview with their individual dental care provider.

The *post-consultation interviews*, which lasted an average of 10-15 minutes, took place immediately after the consultation within a space in the clinic where participants were assured of their privacy. The content of this first interview included the following; 1) what patients think they were told about how they should care for their teeth, 2) how they perceived the interaction, and 3) what their behavioral intentions following the consultation are. A copy of the interview guide is provided in Appendix C. The main

goals of this interview were to get details from patients about their interactions with their dental care provider (i.e. memory recall), their perceptions of the interaction, and their intention to follow the dental health care recommendations they received.

Prior to the start of the interview, the purposes of the study were clearly explained to the participants and the authorizations for the release of health information for research were obtained from participants who volunteered. Then, three demographic questions were asked about their gender, age, and the number of times that they have visited the particular dental care provider. The remainder of the interview followed the developed interview protocol, which included open-ended questions about the treatment/consultation, how the participant made sense of the information that they had received, how they had interpreted the information, and how they intended to put the information into action. The questions were flexible so there would be room for other questions. The interview sessions were structured to allow participants to talk about their personal life, individual experiences and insights. The interviews were recorded by a smartphone. Also, any significant body language and word emphasis were noted in detail after every interview.

The *follow-up interviews* were conducted by phone 7-10 days after the consultation. Specific topics addressed in the second interview asked the patients to repeat what they remembered being told during the consultation, to describe what they have done in term of dental health in the week since the consultation, and to talk about how previous interactions they have had with the dentist (or other dentists) may have affected their behavior. A copy of the interview guide is provided in Appendix C. This part of the interview process was recorded through a smartphone application named

“TapeACall”. Also, as required by federal law, the researcher notified all participants that their phone call was being recorded before starting the follow-up interview.

Another separate short interview (5-10 minutes) was conducted with each patient’s dental care provider in order to gather his or her perspective on the interaction. These interviews took place on the same day of the patient’s appointment. An exception was made with two dentists due to their personal schedule and time constraints, thus the interviews were conducted later on a following day. The focus of the interview questions was on the dental care provider’s perspective on what they recommended to the patient and the nature of the interaction.

Data Analysis

After conducting individual interviews the data was transcribed verbatim. All interviews were transcribed by an online transcription website named “transcribe.wreally.com”. Then Bute’s (2014) interview template (Appendix D) was used as a guide for interview transcription along with “common transcribing tools” suggested by Tracy (2013, p.179).

The data were analyzed by using a process of “reduction” and “interpretation” (Marshall & Rossman, 1989). Each of the transcripts was read through several times to get a clear picture. Then, some themes and important keywords related to how patients made sense of the health information they received from their dental care providers and how they intended to put the received information into action were highlighted. According to Tracy (2013), “Coding is the active process of identifying data as belonging to, or representing, some type of phenomenon. This phenomenon may be a concept, belief, action, theme, cultural practice, or relationship” (p.189). In keeping with Tracy’s

description of coding, points that related to the themes were noted down. The primary focus of this study was on themes that were repeated by participants about information that they think they were told. Thus, seeing whether or not dental care providers and patients described health information differently was the main interest. As expected, there were differences that were clearly noted. Based on previous research, there were certain issues with what patients think they were told that might not be the same as what health care professionals believe they have communicated (Misra et al., 2013) that we were attuned to look for. For instance, because the quantity of information recalled by patients after consultation with dentists is limited (Misra et al., 2013) and patients were not able to follow through on recommended dental care, we were cognizant of statements about managing information for purposes of trying to avoid any indication that could impact their memory recollection.

Subsequently, a codebook on Microsoft Word was created to list out key codes that were generated by each theme. The first iteration involved reading through the printed transcriptions then composing primary codes. Statements that had similarities in broad categories that were categorized by interview questions were grouped together and a general term or phrases to classify statements were used. Then, any statement or phrase that fell into a categorized theme was coded. The transcripts were re-read and each statement under the code it belonged with were put and combined together in more general themes. The initial code table is provided in Appendix E.

In the first stage, ten categories were generated: post-consultation patients' perceptions, post-consultation recommendations, communication interactions, overall satisfaction, behavioral intentions, dental care providers' perceptions, the given

instructions/ information, patients' follow-up perceptions, patients' oral health actions, and patients' interpretation of and behavioral response. "Post-consultation patients' perceptions" was the category named for patients' general perceptions about their interactions that they had with dental care providers (DCP) particularly on an interview date. The statements were explicit where the patients would clearly state what was happening during the time they spent with their dental care provider. "Post-consultation recommendation" was the code for the information or recommendations that the patients thought they were told by DCP. "Communication interactions" was specifically highlighted the communication part of the interactions that happened between patients and DCP. "Overall satisfaction" highlighted statements of an expression of patients' satisfaction (e.g. satisfied, amazed, pleased) toward their DCP. "Behavioral Intentions" was the category that mentioned about patients' behavioral intentions following the recommendations. "Dental care providers' perceptions" was the code for the DCP's perceptions toward the interaction they had with the particular patient. "The given instructions/ information" was about the information or instructions that the DCPs thought they had spoken to their patients. "Patient's follow-up perceptions" included statements of a perception of patients on 7-10 days after their appointment about what they think they were told. "Patients' oral health actions" was the category mentioned about an oral health actions that had happened during the week after interaction. "Patients' interpretation of and behavioral response" was about the patients' interpretation of and behavioral response to what their DCP told them at the last visit into their overall understanding of oral health.

In the second stage, the reduction process was applied, thus the ten original categories were reduced to three major themes that related to the perceptions, sensemaking process, and reasons that led patients to transform information they received into action. The first major theme “patients’ perceptions” summarized how patients assessed the interactions with dental care provider that happened during the consultation/treatment. Also, their satisfactions (e.g. likeness, happiness, emotion) that were expressed after the appointment, which mainly addressed how satisfied they were with the way dental care provider treated them were mentioned. This theme was integrated from four primary categories: post-consultation patients’ perceptions, overall satisfaction, dental care providers’ perceptions, and patients’ follow-up perceptions. The second major theme “sensemaking” talked about sensemaking process which was the part where communication took place on how patient make sense out of an information they received from dental care provider and dental care providers tend to be the only source of information that patients relied on. This theme was integrated from three primary categories: communication interactions, post-consultation recommendations, and the given instructions/information. The last major theme “translation” explained that patients’ intention to follow the instruction/information they received from dental care provider was primarily occurred for their personal benefits (e.g. appearance, eating, confidence, finance). This theme was integrated from three primary categories: behavioral intentions, patients’ oral health actions, and patients’ interpretation of and behavioral response. Through these themes, we attempted to capture the sense of patients regarding their communication and sensemaking skills in order to translate information they received from dental care provider into an action.

Results

Perceptions

Research Question 1a asked about patients' perceptions based on their interaction with their dental care providers. Evidence of general comprehension from the patients' perspective of what had happened during the visit was evident in two themes: patients' ability to place information into the context of personal history, and patients' ability to implement dental terminology.

Research Question 1b asked about dental care providers' perceptions based on their interaction with their patients. The evidence found that all dental care providers were also satisfied with the interaction they had. Evidence of this general comprehension from dental care providers' perceptions of what had happened during the visit was evident later in the perception of interaction.

Perceptions of treatment recommendations

In exploring patients' perception about the interaction they had with dental care providers during the appointment, all patients found it satisfactory and said they were able to feel that their dental care providers treated them very well. Although two patients were frustrated because the dentists were not able to finish their treatment as they first planned, there was no indication of disappointment towards the dentists. Moreover, all patients tended to understand almost everything that happened during the appointment.

Putting what happened during the visit into a larger personal history context.

Patients described their perceptions toward the particular visit mainly in general.

Instance, they were able to recall the information and tell what was happening, why they came to see the dentist, and how many tasks that were planned for and how many tasks

that were actually completed after that visit. The interviews were generally able to provide fairly in-depth descriptions of the work that was being done. One patient, for example, explained:

“Well, three days ago I had the first real appointment with him. And so he prepared to give a permanent lining to my upper dentures and so last time he was able to do the preliminary work and then had three days to work on it and today he returned the upper denture to me which I'm very happy to get because I didn't like going three days without it for eating and appearance. So it fits very well. I was amazed at how accurate it was and almost no adjustment. So he did a very good job with it. I'm very pleased.”
(Man, age range 50 years and above, 1-3 visiting times)

It was remarkable that the patients were putting the current interaction into a broader personal history context, as they were able to generally comprehend what they were being told to the researcher. Moreover, as we were observing this particular patient during the interview, it appeared that there was no reluctance when he was speaking about it. In fact, he looked confident and proud. In another sense, patients acknowledged what was happening to them such as plan, method, procedure, and materials that could potentially interfere with their oral health. Also, they did not disregard information that they were told by dental care providers as if they allowed themselves to neglect this information, they would not be capable of being responsible for their individual oral health responsibilities. For example, one patient told me that she's been a patient of the clinic for almost 20 years and she still remember cleaning procedures that she's been told by someone from the history, she said:

“I've been a patient here for almost 20 years and I think I know it, the cleaning procedures so I didn't ask him about it because I'm sure that I know how to handle it. Someone taught me before and I still remember those information.”
(Woman, age range 50 years and above, 4-6 visiting times)

Utilizes dental language/jargon in talking about their dental visit. A second indicator that patients understood what they had been told was their use of dental language/jargon in talking about their visit. Some patients were able to mention some technical terms (e.g. tooth no.8, tongue depressor, crowns, bridges) as they described their interaction with their dental care provider. One patient, for example, mentioned the position of his new implant in dental language:

“The appointment was great. I really like Dr.A. He is fun to work with. I'm having some crown removed and we replace because they become old, like 20 or 30 years old and they are going to be replaced. And one of them is in very bad condition and it will need an implant. That's no.8. [laughs]”
(*Man, age range 50 years and above, 1-3 visiting times*)

Rudd et al., (2005) claim that patients' weak or strong literacy skills are affected by the jargon and scientific language used by health professional in speech and writing. Thus, literacy skills, knowing vocabulary, and communication skills of patients are of critical importance. As several patients were confident and able to use dental jargon accurately, we decided to ask dental care providers about this and found that it was not common that patients used dental jargon unless they have dentistry knowledge background. Therefore, these comments reflect a view that patients might have an ability to learn dental jargon – possibly from a conversation that they had with providers – even though they might never have had dentistry background knowledge before. Also, as table 1 shows, none of the patients has visited the dental clinic less than two times. It might be viable that patients learned dental jargon that was used by their dental care provider during interactions they had from time to time. It is noteworthy that LeBlanc et al., (2014) found that medical students do not generally presume that patients understand medical jargon/medical terminology and in many cases they may actually underestimate

patients' understanding. If students' perceptions of patient understanding are not linked to their actual communication behaviors, then behaviorally driven interventions that focus on their actual communication strategies may be the most fruitful means of curbing increased jargon use.

Perceptions of interaction

Patients' perceptions of how their dentist communicates with them. In addition to patients' perceptions of their treatment, the interviews also provided insight into patients' perceptions of the providers who gave them treatment. Every patient positively talked about his or her provider. They were able to sense that their dentist was kind, caring, and helpful from the interaction that they had. Similar to Martin et al. (2003) and Mead & Bower (2000), patients were able to notice different things than providers. Which means, they noticed when their providers seemed caring, interested, attentive, and present. They also noticed respect, accommodation, flexibility, and understanding. Even during conversation, patients noticed when the provider's tone of voice seemed confident (Ambady et al., 2002). They noticed when the provider has addressed their concerns. Overall patients noticed their providers' overall style. Thus, it was noteworthy that several patients clearly expressed their positive perceptions about their providers, and they also perceived their providers' consideration. For example, one patient said:

“He seemed to taken care of all the problems that I gave him today [*laugh*]. I guess I kinda have a difficult mouth, that's why I came here to solve. He's a very nice and it's been a process getting them all fit and everything he did has been very very good and very considerate in what ever necessary to make them fit well and work well.”
(*Woman, age range 50 years and above, 6-10 visiting times*)

Furthermore, several patients highly valued their providers' interaction styles and therefore said they trusted their provider and willing to cooperate with treatment plan and

follow all recommendations or instructions they were told. For example, one patient who had seen his dental care provider for several times said he trusts him and was willing to follow everything he recommended him to do. His perception showed that he recognized his provider's characteristic as "knowledgeable":

"Well, because I trust what he said. He seems to be very knowledgeable and I trust whatever he said. I should do I would do."
(Man, age range 50 years and above, 1-3 visiting times)

This feedback from patients reflects a view that patients were pleased with conversational interaction they had with dental care providers. For example, one patient described her satisfaction with her dentist by repeating the word "good" while describing the way he was to her. As by "good" she referred her feelings to how the dentist got all the work done as she expected, talked to her and her family nicely and thoroughly so it made her feel relaxed under her condition, and most importantly, he encouraged her to build up her strength to get ready for radiation treatment and to improve her oral health situation. At the end of the interview she also considered herself lucky for being his patient. A part of her expressions from the interview is as follow:

"[Provider's name] is really good and I you know I was in long ride and I and I didn't cry until after it's over. You know I said, "Well, I held out until it's over!" you know and so you know he is *good*. [Provider's name] is really *good*."
(Woman, age range 50 years and above, 4-6 visiting times)

Another example was one of the patients who said that she was happy and felt like her dentist utilized time wisely and beneficially. She added that though she knew that her dental care provider was still learning, he did an excellent job. Surprisingly, the patient said that even though most people might be scared of seeing a dentist, for her it was apprehensive and she enjoyed visiting her dentist. She described:

“Everything is completed now and my dentist is excellent, he knows how to do his part and it made me feel more comfortable with my time with him so just very beneficial. [...] It just excellent that you can have good dentist while they are learning also and they do excellent job, just for practicing, this is wonderful. [...] I really enjoy coming here. You know most people hate dentist but I don't because they just do such a great job.”
(Woman, age range 50 years and above, 11 and above visiting times)

Moreover, several patients asserted they were certain that their dental care providers would always be helpful especially when they had questions or concerns. As these comments indicate, trust was a major part of the perceptions patients had of their dentists, and they were confident that their dentist would assist them when it come to a time that they were in need. For example, one patient responded to my question about whether or not he would ask him if he had a question as follow:

“Absolutely, I can ask him anything and then I'm sure if I have a question I can always come to Dr.A and I know that he will give me a good answer.”
(Man, age range 50 years and above, 1-3 visiting times)

Altogether, patients' perceptions towards interactions they had with their dental care providers were clearly articulated. All of them said they were satisfied with the interactions, specifically with how dentists behaved towards them. Patients' fondness of their dental care providers was consistent with patient's perceptions of the communication and interaction abilities of their dentist as well as their dentist's performance. This finding was consistent with previous research that explained that communication between dentists and patients was an important factor for the success of dental treatments (Karimbux, 2012; Sachdeo, Konfino, Icyda, et al., 2012; Schönwetter, Wener, & Mazurat, 2012). Moreover, effective patient-dentist communication lessens dental anxiety, which means that patient perceptions of provider competence and utilization of dental services were increased (Logan & Marek, 2007). In contrast, dental

anxiety and overall dissatisfaction with care were likely to increase due to deficient communication skills.

Under those circumstances, it was not a coincident that patients perceived interaction with their providers so positively. The interviews of dental care providers suggested that building a good relationship was what they certainly worked on.

Dental care providers' perceptions of how they communicate with their patients.

In comparison to patients' perceptions toward their dental care providers, it is noteworthy that dental care providers were also considerate of patients' feelings. Several of them mentioned that they were enthusiastic in building trust with patients and tried to make their interactions as pleasant as possible. In other words, the providers valued a relationship with patients and believed that having a strong connection with patients would ease them to achieve a treatment goal that would benefit both sides. With this intention, dental care providers tried to make an interaction with their patients in a sense of conversation. Some dental care providers said they started the conversation with a non-medical type of question first. They had a feeling that integrating conversation topics that were not related to dentistry (e.g. family, friends, vacation) was able to reduce patients' anxiety and nervous tension along with building patients' trust. For example, one dental care provider from the third year said he could do better if he had a better communication with his patient:

“Well, beside the treatment, I can talk about something else like on the weekend what did you do? We did talk about those kind of stuffs like general stuffs but most of the time I have to focus on the work so I would say I could do better and trying to communicate with patients to get to know her better and have her get to know me better. That way we can get a better interaction between patients and the dentist we can establish a better trust between patient and dentist. I think that is the most important thing that every dentist have to do because patient is going to be sitting in

our chair for at least, in private practice it would be like an hour or at least half an hour, if you just sit there have patient open their mouth quietly and you just do all your work quietly then you are not building any trust with the patients.”

(Male Dentist, 3rd year resident)

Similarly, another dentist from the third year explained how he was sensitive towards the interaction with his patient and assessed that for him, communication with patients was not a one-way approach, but it was, actually, holistic. He said he opened up to get to know his patients and was willing to answer every question if he could, and that was because he once had patient who appreciated this approachable method, therefore he has been applying it to other patients since. During the interview, he specifically said:

“The way I interact with patients I take it to a little bit personal level like I don't just ask about dental stuff, I get to know them like hey how's your kids? how's work? how's everything around you? And those kinda stuffs and they would happily open up. There is one time I had a patient and after I interviewed him with checking all the dental and medical stuffs I asked him about how many kids you have blah blah blah and he was like "To be honest doctor, you are the first dentist who asked me this and I like it." and that also let them get to know me, they asked me questions about my family about where I came from such and such things. It not just about teeth, you have to treat it holistically not just focusing on one thing like only dental stuffs. So it's a holistic approach it's not a one-way approach.”

(Male Dentist, 3rd year resident)

Regarding how dental care providers valued their interaction with patients, it was found that one of the participants expressed what he had been told in dental school about how important communication was in order to retain trustworthiness, cooperation, and good relationship with patients. He described how provider's communication skills were as important and useful in fostering patients as formal dental skills (e.g. diagnose, prevent, correction, or aesthetic improvement) training in dental school:

“My mentor back home he always says that the thing that keeps your prosthesis in is not patient's saliva because for dentist we know that saliva for the patient is act like a glue that attach denture with the mucosa but my

mentor said it's not a patient saliva that actually keep the denture inside patient's mouth. It's actually the dentist's saliva; the way or how much we talk, how much we communicate, how much we convince patients to keep the denture in place.”

(Male Dentist, 3rd year resident)

As a result of dental care providers' concern for their patients, the patients reported receiving many compliments and expressions of satisfaction after the appointment was finished. The comments were mainly focused on how happy they were to meet a dental care provider, how relieved they were when their providers talked them through all procedures, how sincerely their provider interacted with the patients during the procedure, and how communication with dental care providers helped them feel less stressed and less anxious.

Sensemaking

The second research question examined how patients make sense of health information received from dental care providers. Nearly all of the patients interviewed were able to accurately recall information they received from their dentists. Although some of them were not able to recall everything, the most important details (i.e. main point of the instructions) were not what they forget to mention. Patients identified several challenges as they made sense of information they received from dental care providers, including differences between what patients think they were told and what dental care providers actually told them, similarities, and factors related to sensemaking. In this section, the sensemaking in terms of the match between what patients thought they were told and what dental care providers thought they actually told was first analyzed. Then, the themes that were emerged related to specific challenges patients faced when seeking to make sense of health care providers' provided information.

Differences and similarities of information between dental care providers and patients. As we were not allowed to observe dentist-patient interaction during the appointment time due to patients' rights and regulations, the information in this section was genuinely reported based on dentists and patients' perceptions on what occurred. After comparing the interviews, it appeared that both patients and dental care providers mentioned what they perceived as the most important information from the interaction, however, with dental knowledge background and training, dentists were able to give more details and more in-depth information than patients. The conversations below illustrate the comparisons between the information we received from one patient and his dentist. The patient was asked to explain what his dentist told him during the particular visit while the dental care provider was asked to explain what he told his patient.

PT: "Well front denture to use adhesive on it, two small points on it or three small points on it. And then I have a schedule to come back on Wednesday at 9. [...] and I can't chew anything sticky erm chewing gum or caramel or anything like that."

(Man, age range 50 years and above, 11 and above visiting times)

DR: "I told him not to eat anything sticky for example gum, and caramel then I told him that he might expect that there's gonna be some pain around the gum because after crown preparation we had to cut parts of his gum out and that might damage and it might hurt him. So I told him to anticipate that there's gonna be some pain afterwards and ... oh I told him about the upper denture. I teach him how to apply denture adhesive since the flipper doesn't have class to hold on so I gave him a patient sample of denture adhesive and I did show him by taking his denture out then show him by put a little piece I mean a little amount of denture adhesive on three places one is on the front of the denture and the other two is on the side of the denture and I told him that the denture adhesive should last for about 6-8 hours and I instructed him how to clean the denture adhesive properly every time he take it out. And I told him that if there's any problem for example the denture is broke or temporary broke or any unusual pain he should give me a call."

(Male Dentist, 3rd year resident)

The conversations indicate that the patient was able to recall the main instructions he should follow, which were to use adhesive for the front denture and to avoid eating sticky food. However, the dentist explained and made sense of the situation and the information in a more sophisticated way. In addition to what the patient mentioned, the dentist also said he told him that he should expect some pain around his gum and instructed him on how to clean the denture properly. In contrast, the patient mentioned that he had a schedule to come back again on Wednesday while dentist did not mention that. It is noteworthy to mention that the patients remembered the dos and don'ts but not the reason why. It seemed like understanding "why" may not be a part of a patient's sensemaking. Of all information provided, only some of it is a part of the "meaning" the patient takes away. In other words, the most important pieces of information are what patients taken away. However, dentists' primary concerns seemed to be what they thought important to their patients.

A similar situation occurred with another dentist/patient pair, where the patient mentioned only what he thought he needed from his dentist while the dentist told me in detail about instructions he had given to his patient. The conversations are as follow:

PT: "No, not necessarily because I'm already good at that anyway. He said something about not using the type of a glue that I have been putting back this no.8 with because it keeps falling out. And so that's the only information he has given me. That's all I really needed."
(Man, age range 50 years and above, 1-3 visiting times)

DR: "Yes. I told him to take care of the temporary while he has it until Wednesday that before he came back again for remove another one, like don't eat a sticky food on the temporary and be careful not to have a hard food chewing on the front teeth. Just only soft diet. Something like that. [...] Also, I suggested him that he can use a toothpaste instead of a cement that we use over here to glue it in case that he wanted immediate smile. [...] I just do some suggestion for him that he can use toothpaste in case he needed to glue it back in."

(Male Dentist, 2nd year resident)

It is interesting to see that the second conversation revealed that patients seem to have a sense of a “minimum level of information” they need as the patient said, “*That’s all I really needed.*” This could be an indication that he didn’t expect numerous information. In fact, a part of the patient’s sensemaking was all about information that was needed.

Factors related to sensemaking. The results of interview reveal two themes that impact sensemaking in patients. Patients’ comments indicate sensemaking skill is associated with previous experience and their common notion about oral health and wellness.

Previous experience shapes sensemaking in the present situation. In addition to the ability of memory recall, patients applied their previous experiences they have had with a particular thing to a new thing that they were facing in order to make sense of information they received. Several patients mentioned that they have been following instructions that were given by their dentists for a period of time; whereas, several of them claimed they were given similar instructions or have had experiences of how to take care of themselves before so they didn’t show any intention to ask a question or any instruction again. In other words, patients believe they know it. For example, one patient specifically said that he previously had dentures so he knew how to take care of it. Thus, he didn’t want to ask questions and was not worried about his understandings. In contrast, he asked his dentist about something he never knew instead. He explained:

“Well, like I said I previously had the denture so I have had previous experience with taking it out and putting it in holder with water for overnight so I knew those things. He pretty much just encourages me to do it every night. Actually I asked him if he would recommend every night

and he said it was better to do that so that no microbes could build up with it being although it looks smooth ... it can get very small microscopes in there and soaking it overnight and using the cleansing tablets help with that.”

(Man, age range 50 years and above, 1-3 visiting times)

Patients think they already know about the information. Most patients said they did not ask their dentist a question, they said mostly the instructions that were given (e.g. cleaning, putting prosthesis in and out, using soft toothbrush) were common for them. The interviews with dental care providers describe that while many dentists performed great during the appointment with patients, several of them missed out mentioning or explaining some information details. Nevertheless, it is noteworthy that although the dentists didn't explain or demonstrate how to do specific instruction, the patients were still able to make sense of that information by applying their experiences to it. This indicates that patients did “make sense” of the information they've been given – whether it's based on things the doctor actually told them or not. One patient said that his dentist told him not to chew sticky things so we asked him did he explain why and here is his answer:

“Yes, I can't chew any thing sticky erm chewing gum or caramel or any thing like that. He didn't say why he just said not to do that. I figure it will help pull them out.”

(Man, age range 50 years and above, 11 and above visiting times)

This patient said he figured that sticky things might pull his front dentures out which is basically the common understanding for many people even for those who never had a denture before. With that being said, if patients think information they received was not complicated and together with their previous similar experiences, they wouldn't want to ask the dentist for an explanation. One patient, for example, explained:

“I didn't ask anything because he was very erm the question would be common. I've been a patient here for almost 20 years and I think I know it, the cleaning procedures so I didn't ask him about it because I'm sure that I know how to handle it. Someone taught me before and I still remember those information.”

(Woman, age range 50 years and above, 4-6 visiting times)

Several patients' responses illustrate a slight variation on factors related to sensmaking on not asking about things that seem obvious and common to them. Yet, there was one patient who already had knowledge about what she was telling and she decided not to tell her dentist that she knew it. In contrast, she listened to her dentist's recommendations and found it beneficial. Hence, the patient appreciated her dentist's motive of teaching her a right thing.

“I already knew how to do it but I like that he didn't make the assumption that I already knew. He just explained it and I guess if I had to say I already know that I could have done that but I appreciated that he was in a motive teaching me a right thing to do. I appreciated that.”

(Woman, age range 50 years and above, 1-3 visiting times)

Extra sources of information. In addition to asking questions about the interaction that occurred during the appointment and the information that was given by dental care providers, we also asked patients about other sources they use to get information about their oral health. Most patients said their dental care provider was the main source of their oral health information, they tend not to seek out more information from other sources and most of them didn't show any intention to do so. One patient specifically said that he was just waiting for his implant to come and didn't want information from anybody:

“I didn't get information from anybody. No. I really didn't need any information about what the plans are for this implant. I'm just sitting here waiting for that to come.”

(Man, age range 50 years and above, 1-3 visiting times)

Another patient mentioned it was dentist's responsibility to tell patient what to do. Although she had some medical background, she knew nothing about dentistry. Therefore, she was willing just to take information from her dentist only:

“No, I know nothing about the mouth. I'm a nurse so I know medicine; I take care of my patient. But other than scrubbing, false teeth and keep them in water, I know nothing about the mouth. So the way he said is what I do that's why he gets big bucks [*laugh*].”
(*Woman, age range 50 years and above, 1-3 visiting times*)

Surprisingly, there was only one patient who specifically mentioned that he occasionally used an Internet search engine, which he described as “Dr.Goo” (i.e. Google), to look for information about implants and later discussed it with his dentist when he had an appointment. Also, this patient stated that before the Internet era, he never looked for any information by himself and only relied on what a dentist said because it was too difficult to do and he would have to put a lot of effort just for that.

Although looking for information about their oral health from different sources was not patients' priority, several patients still mentioned that they occasionally discuss their personal oral health, but only with their partner, family members, or other health care providers (e.g. primary care doctor, nurse, radiologist). For example, one patient mentioned that her primary care doctor was the person that she discussed about her oral health information with when she was once had Temporomandibular Joint Disorders (TMJ). She said:

“When I have gone to my primary care doctor for example I was having some difficult in the jaw area and I mentioned that to him and suggested that I should let the dentist know that. Maybe it sounds like TMJ or whatever the word is and I did mention it to him.”
(*Woman, age range 50 years and above, 1-3 visiting times*)

Additionally, another patient who claimed that he is not an “Internet person” said his partner is the only person he discussed his oral health information with simply because his partner is a nurse and has medical background as well as always takes care of him in a total perspective of health.

“I'm not an Internet person. Erm I would discuss with my partner how I'm doing and that's you know and he's a nurse so that's good that he has a knowledge of being au pair and although this is specify being here, he looks at me in a total perspective of health.”
(Man, age range 50 years and above, 1-3 visiting times)

As defined by Weick (2005), sensemaking is a diagnostic process directed at constructing plausible interpretations of ambiguous cues that are sufficient to sustain action. It is a highly adaptive response which is also interactive and relational. An opportunity for sensemaking occurs daily in medical practices. Sensemaking is also “an issue of language, talk, and communication” (Weick, 2005). Through conversation, patients make sense of their collective circumstances, thinking about it, developing possibilities for coordinating action, and checking assumption. In the end, sensemaking would lead to action. Although patients did not ask or say what they were thinking, they were still processing and making sense out of the situation or the information they were receiving from their dentists. Patients' sensemaking skills were mostly derived from similar experiences and daily life situations.

Oral health behavior

While the second research questions focused on the sense making processes of patients toward their health information they received from dental care providers, the third research questions ask about patients' efforts to translate and take the received health information into action.

Translating received information into action. The results from the interview on how patients translated information into action indicate a consistency with Ley's study in 1989. In his study, he proposed that patient compliance can be predicted by the patient's degree of satisfaction with the consultation, level of understanding, and accuracy of recall information. Also, his model from the study has been supported by number of studies (Ogden, 2004) and acknowledges the importance of effective communication and its relationship to compliance in health care.

The last part of results from this current study explains communication perspective of patients in terms of transfer of information received into health behavior. As previously mentioned, the majority of patients claimed that they satisfied with interaction they had with dental care provider and understood what they were told so that they could recall. These factors, therefore, led to "adherence" which later encouraged them develop information they received into health action (see Figure 1).

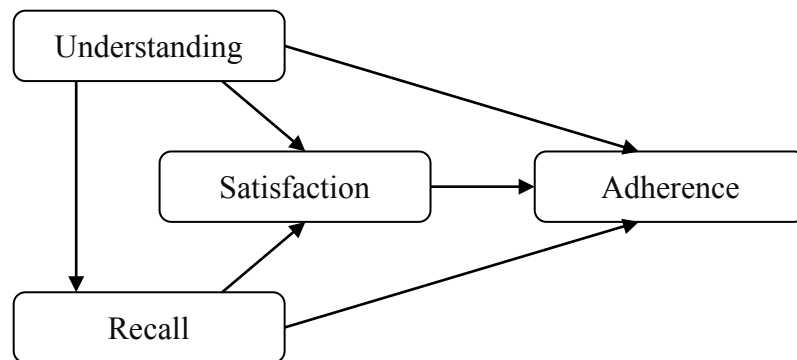


Figure 1 Overview of Ley's model on the interactions between patient-related factors and therapy adherence (Ley, 1988).

Factors contributing oral health behavior

As mentioned earlier, patients' perceptions played an important role in cooperating with treatment plan. Consequently, patients would be more eager to follow all instructions if they have a positive and trusting relationship with their dentists. The results of the interviews revealed three themes that affect the patient's translation of healthcare provider provided information into behavior.

Self-benefits. During the interviews, most of the patients showed their intention to follow the instruction/information they received from dental care provider primarily for their own benefits. As one patient answered:

“Sure, of course! It's for myself you know, my own benefits.”
(Woman, age range 50 years and above, 4-6 visiting times)

Another example is about one patient who came to see the dentist because her tooth supported fixed partial denture (i.e. bridge) was broken. She told me that the dentist gave her an instruction to avoid any kind of sticky food so we asked her intention to follow the instruction. She said she would because she didn't want another broken bridge. This indicates that the patient would take an action for her own benefit. She said:

“Yes, I don't want another broken bridge and I don't want to come back in. So, I'm gonna follow the instructions.”
(Woman, age range 50 years and above, 1-3 visiting times)

One more patient said that she doesn't want any problems to happen to her thus she would try everything that her dentist says:

“Yes, yes I do. Well, I don't want any problems. So I will try, whatever he told me to do I will try to do it. No complications.”
(Woman, age range 50 years and above, 4-6 visiting times)

Trustworthiness. In addition to this explanation, patients' efforts to follow an instruction may also be particularly come from a confidence they had in their dentists. As

mentioned earlier, patients often follow the instructions that were given when they have a good relationship with dentist. They push their doubts aside and simply act in accordance with what they were told. One patient specifically said that for her there was “no why”. She showed her intention to follow the instructions without any hesitation. The patient described:

“Oh yeah for that way. You know there is no why. No. Whatever he said I will do.”
(Woman, age range 50 years and above, 4-6 visiting times)

Several patients also said that not only just following what they were told but also they would try their best to do it “exactly”. One of the patients told me that part of the instructions that he needed to follow was to stop using denture adhesive glue that he’s been using for a while. Then we asked him did his dentist give him a reason why he should do that. He answered me that his dentist made it all clear for him and because of that he would follow the instruction and would do it exact. His answer is as follow:

“Yes, well because they might be a chemical reaction from some kind of glue that I would use or even something that I got at the pharmacy to help glue add in. I look pretty ugly with that tooth messing right in the front and so I kept trying to glue it but I can't and he said just use toothpaste. So that's what I'll do, I'll do it exact. And I hope it won't fall out again.”
(Man, age range 50 years and above, 1-3 visiting times)

The conversation above related to the previous information that patients are able to notice their dentists’ confidence. Thus, it motivates patients to cooperate in a treatment plan and increases their willingness to follow instructions as best as they can.

Some other patients specifically mentioned the word “trust” during the interview when we asked them whether or not they would follow instructions. And because of “trust” that they have they would do everything they were told without any complication. For example, one patient said:

“Absolutely! [*laugh*] Yes, absolutely. Everything he said to do I will do. I trust him very much. What he says, I do.”

(Woman, age range 50 years and above, 11 and above visiting times)

Perceived ability to follow post-consultation instructions. Additionally, the extent to which patients themselves wanted to follow the instructions they received from providers seemed to be dependent not only on how much patients trust their dentists but also how they assessed their own capabilities for following post-consultation instructions in order to avoid or prevent complications that might come if they didn't follow. For example, we asked one patient whether or not she would follow the instructions. The patient assessed that she expected her treatment plan to be successful so she would do it very carefully. She said:

“Oh yes. Yes, these teeth are gonna work when we are there. So yes, I will do very carefully.”

(Woman, age range 50 years and above, 1-3 visiting times)

The results of this research indicate that three additional factors; self-benefit, trustworthiness, and self-efficacy, play an important role in encouraging patients to adhere to information that dental care providers gave them, leading us to modify Ley's model (see Figure 2). The modified model is generally explains that self-benefits and self-efficacy are additional factors that also lead to satisfaction and information adherence. As a result of adherence, a trust-based relationship between patients and providers is generated, and then the relationship is later affects patients' understanding and information recollection.

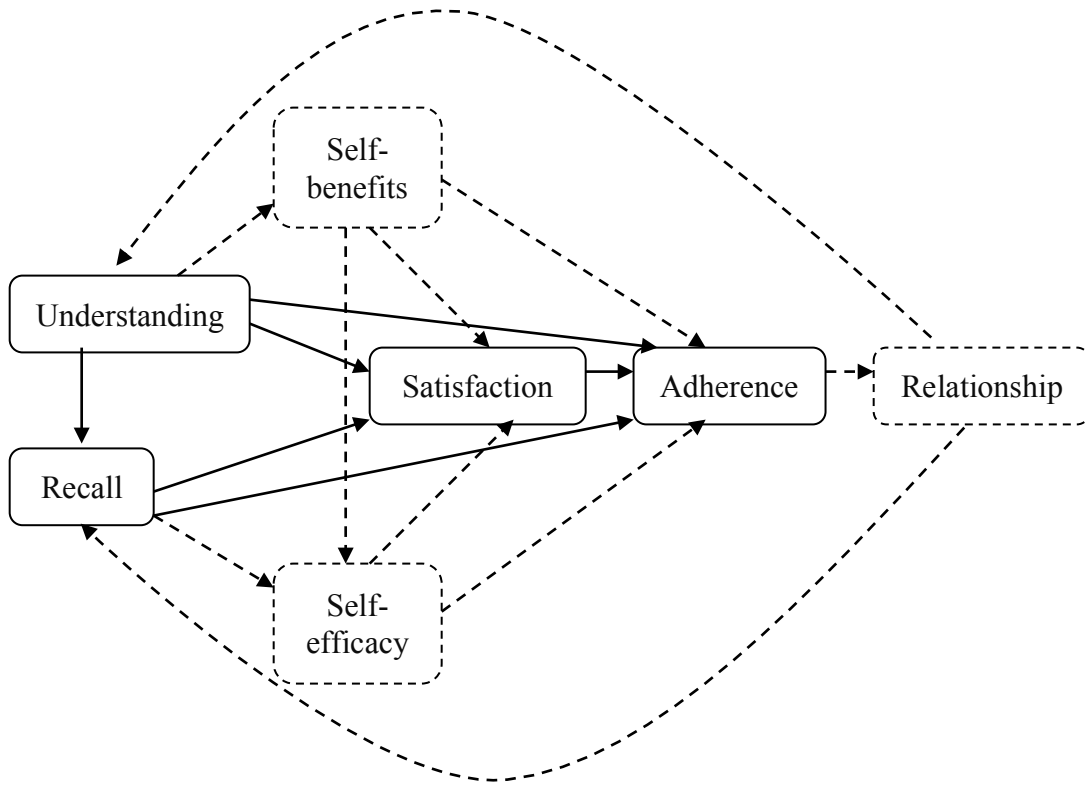


Figure 2 Overview of the modified model on the interactions between patient-related factors and dental care recommendations adherence.

Followed-up behavior. Seven to ten days after interviewing, all patients were called for a follow-up interview. Although only 9 patients responded, we discovered that most of them still remembered information that were told by their dentists. The details of information they told me were less than during the first interview, but in general, they could still recall. Furthermore, all patients assured that they kept following every instruction they received and planned to maintain it as long as it needed be. For example, the patient was asked to recall his memory about the appointment that we met to tell me

how much he still remembers about it and whether or not he kept doing it. His response is as follow:

PT: “Yes he explained before what's going on, what's he will do, what materials he used, and sometime that smell very good [*laughs*] ... that kind of stuff. We did some x-rays, hmm what else, I don't know what else [*laughs*]. Oh and that I have to be careful, the crown is just for covering my tooth so he told me what kind of food I don't have to eat, that kind of stuff.

K: Did you follow his recommendations?

PT: Oh yes. I have to [*laugh*] also I have to come back and he has to glue it back because he can't open that root canal. You have to keep it clean.
(*Man, age range 50 years and above, 1-3 visiting times*)

Another good example is about the other patient was able to mentioned most of the instructions that were given. Though she claimed she couldn't recall all information for me, she was able to mention the important parts of it. It is noteworthy to mention that the patient also mentioned how well the dentist treated her and how much she still appreciated about it. The conversations are as follow:

PT: “Yes yes, the main thing is usually use stick which is really hard now and I've been trying, those tongue depressors that I have to put in my mouth and he told me how to take care to not do anything with the prosthesis for a few days. I don't know what else, I know I know he told me several things. But that was a main thing you know. I can't think of anything else, I really can't. I know he told me more but I can't think about it right now.”

K: “Have you kept doing that?”

PT: “Yes, yes.” [...] I feel like [name of her dentist] always been really good. I'm glad to had him help me because he is really good and I'm glad now that he helps me through it so you know I'm really lucky.”
(*Woman, age range 50 years and above, 4-6 visiting times*)

The conversations above also indicate that even after a week, patients were still able to remember the feelings they had about how their dentists treated them. Undoubtedly, having these “positive” feelings was playing a big role on patients in order to take instructions they were told into actions. In summary, an effective communication

between patients and dentists not only generates a good relationship or trust between both parties, it fulfills a successful medical treatment plan and keeps patients doing what they were told to do. These patients' affirmative comments not only indicate how efficient the dentists were in their clinical professional role but also how capable they are of being good communicators. It all will eventually have to work together. Through knowing about benefits they would have, the patients performed well in following instructions they had been told, but it was not enough to achieve a successful plan. Gaining a successful dental treatment plan required that patients trust in their dentists' words to enact the medical expectations of their role.

Discussion

Previous studies report the perception that patients don't always follow healthcare providers directives and it is conceivable that part of the problem might be an imprecise explanation of the way patients perceived and understood information they were given. Since there are important connections between patients' perceptions and involvement in the treatment, a better understanding on how information are processed and responded behaviorally is needed for reaching an equilibrium communication and a successful treatment plan.

The purposes of the study were first; to explore the perceptions patients have of dentist-patient communication, second; to understand the sense that is made of messages they received from dentist, and third; to discover what motivates them to take that communication into action. The results clearly show that all patients were satisfied with the interactions they had with their dental care providers and these interactions motivated the patients to take actions to take care of their personal oral health together with following dentists' recommendations. The extent to which patients themselves wanted to take an action seems to depend on how much they trust their dentist and their perceptions of benefits they would receive from taking an action. Patients who knew about benefits would follow all instructions by themselves and preferred to get more beneficial information from dental care provider. But patients who highly valued a relationship with their dentists would follow all instructions mainly because of their trust and wouldn't seek out more information but they rather follow everything exactly. Moreover, several patients were able to learn some dental jargon from conversations they had with dental care providers. They also knew and sensed that their dentists cared and paid attention to

them. Therefore, these factors shape their sensemaking which further lead to their understandings of the information they received from dental care providers.

Patients usually positively perceive interactions with their dentist during a visit

The findings that patients had positive feelings about their dentists due to their perceptions that dentists were kind and trying to help them were consistent with previous studies, specifically that patients were able to notice different things than providers such as respect, accommodation, flexibility, and understanding (Martin et al., 20003; Mead & Bower, 2000). The patients highly valued their providers' interaction styles typically because of what they noticed and that led to their responding positively, not only to the dentists but also to the treatment plan. In other words, patients who perceived their dentist positively (e.g. confident, professional, flexible) were willing to cooperate in a treatment plan and follow recommendations or instructions they were told more than those who noticed negatively (e.g. uncertain, unprofessional, inflexible). In addition, clarification was also another important factor to the patients as all of them found it comfortable when dentists opened up for a question or took the time to clarify something without making the assumption that patients already knew it. It transpired that allowing patients to feel like they were a part of the treatment plan also made them feel more confident, and dentists undoubtedly gained trust from their patients. Moreover, it was interesting to know that although six of dental care providers who participated in this study were international, patients reported neither language nor cultural barriers. This can be interpreted that differences in ethnicity might not have an impact on patients' perceptions.

Beyond these acknowledged relationships, the study also found important insights of dental care providers associated with patient-provider communication. The findings that dental care providers were also considerate of patients' feelings revealed that dentists were aware of the importance of patients' trust and that motivated them to be straightforward with their patients. Moreover, replacing dentistry topics with other conversation topics such as family, friends, or work were mentioned by dental care providers as useful strategies for reducing patients' anxiety and nervous tension. This type of communication between providers and patients plays an important role in the success of interventions aimed at improving dental care delivery. However, overly talking about non-dental subjects might be translated to lack of professionalism thus, balancing non-dental and dental topics is suggested.

According to Schwartzberg, Cowett, VanGeest, & Wolf (2007), the American Medical Association (AMA) and health literacy experts recommend using 18 communication techniques which include seven basic techniques that have been found to give positive health outcomes. These 18 techniques are groups into five domains, including interpersonal communication, teach-back method, patient-friendly materials and aids, assistance, and patient-friendly practice. The items in the first two domains contain the seven basic techniques, which are 1) limit number of concepts presented at a time to two or three, 2) ask patients whether they would like a family member or friend to accompany them in the discussion, 3) draw pictures or use printed illustrations, 4) speak slowly, 5) use simple language, 6) ask patients to repeat back information or instructions, and 7) ask patients to tell you what they will do at home to follow instructions.

However, conversational approaching method is not included in interpersonal communication technique. Taking a communication class to improve an interpersonal communication skill particularly on making conversation with patient could be one factor that helps increasing conversational approach usage among dentists. In addition to communication skills education that have been offering in dental school, conversational approach or – so-called “bedside manners” tend to be the effective method. Moreover, Jordan et al., (2009) found that conversation can facilitate intervention success because interventions usually rely on new learning and sensemaking and these are accomplished through conversation. In contrast, inhibiting sensemaking and learning can block the success of an intervention. As all interviewed patients were highly satisfied with the interaction they had with their provider and favorably expressed toward their perceptions, the emphasis on trust building by having a non-medical conversation with patient is dependable. Therefore, dental care providers should consider applying more of conversational approach to the patients.

Sensemaking skills: a minimum level of information

The findings in this study about the quantity of information recalled post-consultation between dentists and patients were similar to Misra et al. (2013). Although almost every patient accurately recalled most of the information they were told, dentists’ recall was still greater than that of patients. Overall, patients remember the “dos” and “don’ts” but not the reason “why”. The results of this study suggest that being able to interpret “why” may not be part of a patients’ sensemaking. Patients appeared to take away only information they think necessary. Patients also saw the “necessary” information as “a minimum level of information” that patients need in order to make

sense out of it. Thus, it is important for dental care providers to discern their patients' minimum level of information needed. For example, asking patients about what they would like to know might indicate a scope of proper information provided by dentists and facilitate giving information in a way that is useful and not confusing to patients.

Previous studies in medical and dental show that patients remember some aspects of what is discussed, but apparently not those aspects that are likely to help their oral health (Misra et al., 2013). I, however, argue that it is different in this study as most of the patients interviewed accurately recalled instructions they were told and they also mentioned they would follow it for their own benefits. In addition to the quantity of information recalled, one patient even showed her willingness of writing down all instructions that she was told so she wouldn't miss it. This action corresponds to the actual way she felt that her dentist was "*really good*" to her thus, it indicates that patient's feeling towards her provider encouraged her to become more cooperative. My recommendation is that provider considers helping their patients by providing written or print materials because it might increase information accuracy for the patients' memory. As such, it is possible that the patients became overwhelmed after they receive too much information thus, providers should consider using an organized written material to remind and improve patients' understanding of information (Jolly, Scott, & Sanford, 1995).

Linguists and reading experts have established links among different skills (e.g. reading, verbal presentation, and oral comprehension) and found the relationship between health outcomes and patients' literacy skills and competencies (Snow, 1991). That is, the skills are not limited to reading but may instead be related to oral comprehension skills. In consequence, knowing an ability to understand instructions without relying on face-to-

face interaction and a large working dental/medical terminology are vitally important for provider-patient communication (Rudd, 2003). Also, avoiding a misunderstanding of medical terminology during a consultation can potentially reduce patient anxiety and distress (O'Connell et al., 2013). Previous studies explain that most of the dentists were trained in dental school that they have to reformulate the information they were going to give to a patient into phrases that expel any dental jargon (Holden, 2011). Also, removing technical terms when explaining situations and issues to patients is the simplest way. Therefore, the information that dentists transmit to patients sometimes is not always received in the way dentists intended. However, the findings about dental jargon that the patients were able to learn from conversation they had with providers indicated that patients have an ability to learn about technical terms if they would like to. It is then suggested that patients can be educated with some necessary technical terms that related to their situation, thus, patients could use it in conversation with their dentists. Consequently, helping patients with their vocabulary skills can decrease the misconstruction of messages sent by providers.

In addition to comprehending patients' sensemaking competences, it is interesting to notice how patients seek extra oral health information. In the past decade, the Internet has been routinely used as an information resource for both patients and providers. Among currently available technologies, Internet has the potential to access updated health care information (Godlee, Pakenham-Wash et al., 2004). One patient in this study mentioned "Dr.Goo" (i.e. Google) and indicated that he was enthusiastic to educate himself about health information. Although, gathering information was not the patients' priority, they knew they could get it from other sources and would like to discuss that

information with their dentist. Therefore, providers could talk with their patients about extra sources. A suggestion about some credible sources or an opportunity to discuss with patients would be recommended.

Patients' efforts to translate and take received health information into action

Regardless of communication behaviors, patients value their relationship with their dentist on the basis of trustworthiness and reliability. The findings that patients would take efforts to follow the information or instruction they received from dental care providers when they trust their dentist were predictable. Previous studies have confirmed that strong relationship between providers and patients can influence patient care outcomes such as treatment compliance, patient satisfaction and adherence to treatment (Bylund, Peterson, & Cameron, 2012; Kirshner, 2003; Rozier, Horowitz, & Podschun, 2011). Similar results were found by Muirhead, Marcenes, & Wright (2013) who described that patients who lack trust and confidence in their dentist were more likely to experience poor oral health-related quality of life (OHRQoL), reinforcing the importance of dental patient experience in healthy ageing and well-being. Thus, generating a good relationship with patients is considered as an effective tactic that dentists can apply in order to reach a patient's acceptable level of satisfaction.

Patients' preferences of following instructions were also consistent with personal benefit they could get if they follow. Most of the patients were very likely to take an action because they wanted to avoid or prevent any complications that could happen. Due to maintaining oral health is important for psychosocial well-being, patients' perceptions of their own oral health are now recognized (Gerritsen, Allen, & Witter et al., 2010). The follow-up interview also indicate that patients who show an intention to follow the given

instructions since post-consultation were maintaining their action particularly because they wanted to take the most benefit out of it. Given that patients foreseen, we recommended dentists to inform patients about complication that might occur if patients didn't take an action, not only physical effects but also psychological and psychosocial (e.g. appearance). Evidence-based patient experience indicators that affect patient outcomes could also be used to compare and reward for positive patient experiences. This recommendation is as well applicable for general practitioners and general medicine. An additional research might need to be conducted in order to gain a better understanding of effects that can easily motivate patient to take follow provider's recommendation.

Strengths, limitations, and future research implications

The major strength of this study is the qualitative approach, which provides an understanding of how patients perceived the interactions with their dentist, and how patients make sense of information they were told and how they see their own role in action-taking for applying that information. Also, to my knowledge, there are no similar studies comparing patients and providers' perceptions in a qualitative approach.

However, we acknowledge this study's limitation. Firstly, this study was limited to a small/specific group of patients and providers. It is possible that interactions might be changed with a different group of patients such as different age or patients from other specialties (e.g. orthodontics, dental hygiene, periodontics) or even in a different type of medical specialties. A recommendation for future research would be to change a group of patients as they might come with different instructions and more challenging. With a different group of patients, it would allow us to see a different interaction that might provide a better understanding on how patients make sense of information they were told.

Another limitation is the limited group of dental care providers. This was a small exploratory study which, although sufficiently powered to detect differences between patients and providers, it used a small sample from one dental department. Also, the fact that it was a clinical setting; students seeing a limited number of patients per day may have yielded findings that would be different from a private clinic. As the residents were assigned to see only 2-3 patients a day, they could spend enough time to talk to their patients. Conversely, a private clinic that operates by private dental practitioners could take up to three patients within one hour (American Dental Association, 2010) so the time spend with each patient could be more restricted. Future work needs to be undertaken to replicate these findings in a different dental settings, perhaps conducting an interview in a private clinic where the time is constrained. It is also acknowledge that the follow-up interview with only patients could not corroborate that patients were thoroughly did it. Future studies should replicate this work to confirm that the testimonies that have found here are occur. It is also suggested that future work should control for a length of time frame between each interview and information that were given, in that both conditions may affect recall.

Finally, as multiple ethnicities of dental care providers were represented in this study, future research could examine perhaps, how language and cultural diversity play their roles in patient-provider communication. For instance, interplay between international care provider and native patient or native care providers and international patient, in that both these variable may affect adherence.

Conclusion

This study has shown that dentist-patient communication is important for generating accurate understandings and achieving desired treatment outcomes.

Despite trust that patients have in their dentists, the amount of information delivered to patients should also be considered. Successful dentist-patient interaction could be thought of as a match between what dentists think patients need to know, what patients think they want/need to know, and what patients actually know.

The findings illustrate some barriers that can keep dentists and patients from reaching that equilibrium. This means that sometimes providers share too much, and the patient doesn't know which is the part she or he really "needs to know" or a provider doesn't share something and the patient doesn't ask because they assume they know while doctor assumes patient knows something that the patient may or may not know. Therefore, a specific training to give provider an accurate perception of patient knowledge, particularly by having meta-level conversations about communication preferences, offering information in multiple formats, or getting direct feedback on patient understanding of information may be a useful addition to communication skills. In order to reach the equilibrium, communication between patients and providers should be measured to ensure that both could obtain what they truly want to fulfill desired preferences or treatment outcomes.

As patients value a relationship with their provider and it plays a significant role in their collaboration in the treatment, the importance of trust building with patients is even more compulsory. For that reason, the emphasis on optimizing patient-provider

communication lies with the dental practitioner who should sensitive towards patients' truly needs and mindful with the communication occur during the consultation.

APPENDIX A

Research Summary

Dentist-Patient Communication: How do patients make sense of oral health information and translate it into action?

Overview

Patient-provider communication has been studied extensively in the last two decades, and many researchers have confirmed the importance of communication between patient and provider in medical contexts. More recently, interest in patient-provider interactions in the dentistry context has grown as well, as practitioners and researchers recognize that the dentist-patient relationship is a crucial factor in providing and sustaining high quality dental care. In spite of increased research in patient-provider communication in dentistry, dental care providers still report that patients often do not accurately follow oral health recommendations. Thus there is the need for additional study on how patients make sense of the oral health information they receive and how they translate that information into action. **This study uses qualitative methodologies to better understand patient-provider interactions focusing on how patients transform information they receive from their dentist into action and how these interactions influence patients' perceptions of oral health, with the aim of providing recommendations for optimizing patient-provider relations and dental services.**

Research Methodology

This study will use in depth interviews with patients at the IUPUI Graduate Prosthodontic Clinic and short interview with their dental health providers. The participants should have had previous dental visits and will likely have at least one additional visit in the future. The target sample size for the study is 15-20 adult patients.

I plan on conducting two interview sessions with each participant: *a post-consultation interview* and *a follow-up interview*. The *post-consultation interview* will take 10-15 minutes and will take place immediately after the consultation in a space in the clinic where participants will be assured of their privacy. The content of this first interview will include the following; 1) what patients think they were told 2) how they perceived the interaction 3) what their behavioral intentions following the consultation are.

The *follow-up interview* will be conducted by phone 7-10 days after the consultation. Specific topics addressed in the second interview will ask the patient's perception again about what they think they were told during the consultation, what they have done in term of dental health in a week since the consultation, and how previous interactions they had with the dentist may have affected their behavior.

Another separate short interview (5-10 minutes) will be conducted with patient's dental care provider at a time that is convenient for them in order to gather their perspective on

the interaction. The focus of the interview questions will be their perspective on what they recommended to the patient and the nature of the interaction.

The study is being conducted by Kamolchanok Laorujiralai, an MA student in the Department of Communication Studies, under the directorship of her thesis advisor, Dr. Elizabeth Goering (Associate Professor of Communication Studies, IU School of Liberal Arts at IUPUI). If you have any questions about this study, you may contact me at xxxxx@iupui.edu.

APPENDIX B

Recruitment Letter (Dental Care Provider)

Kamolchanok Laorujiralai
Indiana University School of Liberal Arts
425 University Blvd, Indianapolis, IN 46202
xxx-xxx-xxxx xxxxx@iupui.edu

July 28, 2015
Graduate Prosthodontic Residents
Indiana University School of Dentistry
1121 West Michigan Street,
Indianapolis, IN 46202

Dear Graduate Prosthodontic Residents,
You are invited to participate in a research study entitled “Dentist-Patients Communication: How do patients make sense of oral health information and translate it into action?” I am completing this study as part of my MA in Applied Communication at IUPUI. The focus of the study will be on your experiences with dental-patient interaction and how that interaction affects patients’ perceptions and behaviors regarding their personal oral health.

If you agree to participate in this study, you will be asked to distribute the attached patient recruitment letter to your patients, inviting them to participate in this study. For each patient who chooses to participate, you will be asked to participate in a short interview (5-10 minutes) that will be conducted at a time that is convenient for you. The focus of the interview questions will be your perspectives on what you recommended to the patient and the nature of the interaction.

For questions about the study, please contact me, Kamolchanok (Kara) Laorujiralai, at (xxx) xxx-xxxx or my thesis advisor Dr.Elizabeth Goering (Associate Professor of Communication Studies, IU School of Liberal Arts at IUPUI) at (xxx) xxx-xxxx. I hope that this merits your kind consideration and a summary of the findings from the study, including recommendations for improved dentist-patient interaction, will be made available to you upon request. Thank you in advance for any help you might be able to give.

Sincerely yours,
Kamolchanok Laorujiralai

Recruitment Letter (Patient)

Kamolchanok Laorujiralai
Indiana University School of Liberal Arts
425 University Blvd, Indianapolis, IN 46202
xxx-xxx-xxxx xxxxx@iupui.edu

July 29, 2015
Patients of IUSD Graduate Prosthodontic Clinic
Indiana University School of Dentistry
1121 West Michigan Street, Indianapolis, IN 46202

Dear Patients of IUSD Graduate Prosthodontic,
You are invited to participate in a research study entitled “Dentist-Patients Communication: How do patients make sense of oral health information and translate it into action?” I am completing this study as part of my MA in Applied Communication at IUPUI. The focus of the study will be on your experiences with dental-patient interaction and how that interaction affects your perceptions and behaviors regarding your personal oral health. The data will be collected from two interview sessions with patients; *a post-consultation interview* and *a follow-up interview* and another *short interview* with residents. The *post-consultation interview* will take 10-15 minutes and will take place immediately after the consultation in a space in the clinic where participants will be assured of their privacy. The content of this first interview will include the following: what you think you were told, how you perceived the interaction, and what your behavioral intentions following the consultation are. The *follow-up interview* will be conducted by phone 7-10 days after the consultation. This interview will take approximately 30 minutes. Specific topics addressed in the second interview will include: your recollections about what you think you were told during the consultation, what you have done in terms of dental health since the consultation, and how previous interactions you had with the dentist may have affected your behavior. For questions about the study, please contact me, Kamolchanok (Kara) Laorujiralai, at (xxx) xxx-xxxx or my thesis advisor Dr.Elizabeth Goering (Associate Professor of Communication Studies, IU School of Liberal Arts at IUPUI) at (xxx) xxx-xxxx. I hope that this merits your kind consideration. Thank you in advance for any help you might be able to give.

Sincerely yours,
Kamolchanok Laorujiralai

APPENDIX C

Interview Guide (Dental Care Provider)

Short interview (5-10 minutes)

Note: conducted with patient's dental care provider at a time that is convenient for them

First, I would like to say thank you for your participation. My name is Kara, I'm a graduate student majoring in communication studies. I'm conducting research on the experiences of dental patients on patients transform information they receive from their dentist into action and how these interactions influence patients' perceptions of oral health, with the aim of providing recommendations for optimizing patient-provider relations and dental services. I'm interested in learning about your experiences, so there are no right or wrong answers to any of the questions we'll discuss today. Our conversation will be recorded on this recorder only if you allow me to. If there are questions in the interview that you'd rather not answer, just let me know. If you have any questions for me, please feel free to ask them at any time.

- 1) The focus of the interview questions will be their perspective on what they recommended to the patient and the nature of the interaction.
 - 1.1) How was the appointment with (name of patient)?
 - 1.2) What were the recommendations you gave to your patient?
 - 1.3) Are you satisfied with your interactions with (name of patient)?
 - 1.4) Is there anything that you would add to make the interaction better?

Interview Guide (Patient)

The post-consultation interview (10-15 minutes)

Note: take place immediately after the consultation in a space in the clinic

First, I would like to say thank you for your participation. My name is Kara, I'm a graduate student majoring in communication studies. I'm conducting research on the experiences of dental patients on patients transform information they receive from their dentist into action and how these interactions influence patients' perceptions of oral health, with the aim of providing recommendations for optimizing patient-provider relations and dental services. I'm interested in learning about your experiences, so there are no right or wrong answers to any of the questions we'll discuss today. Our conversation will be recorded on this recorder only if you allow me to. If there are questions in the interview that you'd rather not answer, just let me know. If you have any questions for me, please feel free to ask them at any time.

- 1) What patients think they were told?
 - 1.1 How was your appointment today?
 - 1.2 What did your dental care provider tell you regarding to your dental health today?

- 2) How patients perceived the interaction?
 - 1.1 Are you satisfied with your treatment/consultation?
 - 1.2 Was there any information that you didn't understand?
 - 1.2.1 If so, did you ask a question for clarification?
 - 1.2.2 Why did you ask?
 - 1.2.3 Why didn't you ask?

- 3) What are your behavioral intentions following the consultation?
 - 1.3 From information you have been told from your dental care provider, would you follow his/her recommendation?
 - 1.3.1 If yes, why?
 - 1.3.2 If no, why?

The follow-up interview (by phone 7-10 days after the consultation)

- 1) Ask the patient's perception again about what they think they were told during the consultation
 - 1.1 Do you still remember your appointment from 7 days ago?
 - 1.1.1 If yes, how did you feel about it?
 - 1.1.2 What was the information your dental care provider told you on that day?

- 2) What they have done in terms of dental health in a week since the consultation?
 - 2.1 Did you follow his/her recommendation?
 - 2.1.1 If yes, how many thing have you done since your last consultation?

- 2.1.2 If no, can you tell me why didn't you follow your dental care provider's recommendation?
- 3) How previous interactions they had with the dentist may have affected their behavior?
- 3.1 Does an interaction with your dental care provider have an effect on you?
- 3.1.1 If yes, how does it affect you?
- 3.1.1.1 What else could influence you to follow the recommendation?
- 3.1.2 If no, what could influence you to follow the recommendation?
- 3.1.3 Is there anything else that you would like to talk about regarding your appointment with your dental care provider?

Demographic Questionnaire (Patient)

1) Gender

_____ Male

_____ Female

2) Age

_____ <18

_____ 18-25

_____ 26-33

_____ 34-41

_____ 42-49

_____ 50 and above

3) Time of visit

_____ 1-3

_____ 4-6

_____ 6-10

_____ 11 and above

APPENDIX D

Interview Template (Bute, 2014)

C502

TEMPLATE FOR INTERVIEW TRANSCRIPT

Name of Transcript File:

Name of Audio File:

Name of Interviewer:

Date of Interview:

Start Time:

End Time:

Comments:

In addition to the information above, you should:

1. Insert the transcript file name and page number in the upper right corner.
2. Insert line numbers.
3. Remove identifying information in the transcript and replace it with names and terms in brackets. EX: [local hospital], [Dr. ____]. [Friend's name].
4. Use parentheses to indicate segments that are hard to hear on the audio file. EX: (I remember one time when).
5. Make sure the transcript is as close to verbatim as possible. You should decide whether and how you want to indicate laughter, vocal fillers (e.g., "uh"), emphasis by the speaker, and so forth. The Tracy text includes suggestions for transcribing symbols on p. 179. You can decide which, if any, of these symbols you want to use.

APPENDIX E

Coding Table

Abbreviation	Code	Definition/Explanation	Examples (Direct Quotes and Paraphrased)
First-level [descriptive] codes			
PCPercep	Post-Consultation Patients' perceptions	Patients' general perceptions about their interactions with dental care providers (DCP)	<p>“The appointment was great. I really like Dr. [name]. He is fun to work with. I'm having some crown removed and we replace because they become old, like 20 or 30 years old and they are going to be replaced. And one of them is in very bad condition and it will need an implant.”</p>
PCRec	Post-Consultation Recommendations	The information/ recommendations that patients were told by DCP	<p>“[...] he went over some things and answer any questions that I had to about the care and suggested that always be taken out during the evening hours or night time. He mentioned to me that it would be good use tablets for cleaning which would help with the microbes building up if not every night at least 3 or 4 times a week. And that was it was good to know.”</p>

CommInt	Communication Interactions	The communication interaction between patients and DCP	“[...] He pretty much just encourages me to do it every night”
OverSat	Overall satisfaction	An expression of patients’ satisfaction toward their DCP	<p>“My appointment was fine, very satisfactory.”</p> <p>“[...] so it fits very well. I was amazed at how accurate it was and almost no adjustment. So he did a very good job with it. I'm very pleased.”</p>
BehavInten	Behavioral Intentions	Patients’ behavioral intentions following the recommendations	“ [...] I will just take my denture out each night, use the tablet and the container to soak them in and clean them along with rinsing them during the day especially after eating.”
Dent Percept	DCPs’ Perceptions	DCPs’ perceptions toward the interaction they had with patients	“She was overcome with emotion at the end of our appointment. She started crying and I think out of like some relief and just some happiness that she got a new prosthesis and the erm fillings weren't uncomfortable, getting the injection did bother her. So, it was big a success. I was really pleased.”

Dent Instruct	The given instructions/ information	The instructions/ information that were given by DCP	<p>“I gave him an instruction of how to take care of his denture by using cleaning tablets and remove it while he's sleeping and the way that he chew should be soft diet food.”</p> <p>“I asked her just to rinse it in water and maybe little bit of soap erm and if she is getting toothbrush, no paste.”</p>
Follow-up Percept	Patients’ follow- up perceptions	The perceptions of patients on 7-10 days after their appointment about what they think they were told	<p>“Yes he told me to erm to take them off at night, to make sure that I use the tablet to clean them over night and to use the brush to brush them and so I’ve been able to do those things okay.”</p>
Follow-up HealthAc	Patients’ oral health actions	The oral health actions during the week after interaction	<p>“Yes, I did all of them. I did all the things he told me to do.”</p>
Follow-up InterRespon	Patients’ interpretation of and behavioral response	The interpretation of and behavioral response to what their DCP told them at the last visit into their overall understanding of oral health	<p>“I didn't get information from anybody. No. I really didn't need any information about what the plans are for this implant. I'm just sitting here waiting for that to come.”</p>

Second-level [analytic] codes			
PatPercep	Patients' perceptions	<p>Patients tended to understand almost everything that was happening during the appointment. Their satisfaction was also expressed after the appointment was finished and that mainly focused on how happy they were to met a dental care provider who talked them through all processed and helped them feel less stressed.</p>	<p>“Well today I had to have my denture realign for better fetch and it's very successful. Everything is completed now and my dentist is excellent, he knows how to do his part and it made me feel more comfortable with my time with him so just very beneficial.”</p> <p>(Note: Collapse PCPercept, OverSat, DentPercept, Follow-up Percept)</p>
SenseMake	Sensemaking	<p>Dental care provider was the main source of patient's oral health information, as they tend to not to seek more information from some other sources. Also, they applied their previous experiences they had with a particular thing to a new thing that they were facing.</p>	<p>“Well, I have had the upper denture before so it wasn't as so this was my first experience with it but I did have a new permanent relining and he went over something and answer any questions that I had about the care and suggested that always be taken out during the evening hours or night time. He mentioned to me [...] and that was good to know.”</p> <p>(Note: Collapse CommInt, PCRec, Dent Instruct)</p>
Translate	Translation	<p>Patients showed their intention to follow the instruction/information they received from dental</p>	<p>“Absolutely! <i>[laugh]</i> Yes, absolutely. Everything he said to do I will do. I trust him</p>

		care provider primarily for their own benefits.	very much. What he says, I do.” “Oh yes. Yes, these teeth are gonna work when we are there so yes, I will do very carefully.” (Note: Collapse Post-Con BehavInten, Follow-up HealthAc, Follow-up InterRespon)
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