Management of Chronic Pain among Older Patients: Inside Primary Care in the U.S.

Ming Tai-Seale, PHD, MPH
Palo Alto Medical Foundation Research Institute, Texas A&M Health Science Center

Jane Bolin, PhD, JD, RN
Texas A&M Health Science Center

Xiaoming Bao, MS, MS
Texas A&M Health Science Center

Richard Street Jr., PhD
Texas A&M University

Abstract

Under-treatment of pain is a worldwide problem. We examine how often pain was addressed and the factors that influence how much time was spent on treating pain.

We analyzed 385 videotapes of routine office visits in several primary care practices in the Southwest and Midwest regions of the United States. We coded the visit contents and the time spent on pain and other topics. Logistic regression and survival analyses examined the effects of time constraint, physician's supportiveness, patient's health, and demographic concordance. We found that discussion of pain occurred in 48% of visits. A median of 2.3 minutes was spent on addressing pain. The level of pain, physician's supportiveness, and gender concordance were significantly associated with the odds of having a pain discussion. Time constraints and racial concordance significantly influenced the length of discussion.

We conclude that despite repeated calls for addressing under-treatment for pain, only a limited amount of time is used to address pain among elderly patients. This phenomenon could contribute to the under-treatment of pain.

Keywords

chronic pain; under-treatment; elderly; primary care; videotape

INTRODUCTION

Chronic pain is a persistent, life-altering condition with significant health and quality-of-life connections and socioeconomic implications (Green et al., 2003; McNeill, 2003). Poorly

treated pain has significant consequences, including physical disability, long term impairments, and emotional disorders such as depression (Lavasky-Shulan et al., 1985; Reid et al., 2003). Under-treatment and under-recognition of pain are well-documented with an emerging literature verifying wide variations in chronic pain care across healthcare settings and among racial and ethnic groups (Todd et al., 1993; Luggen, 1998; Vallerand and Polomano, 2000; Bonham, 2001; Green et al., 2003; Wojtasiewicz, 2006). Despite imperatives directed towards improvement of pain treatment and national and international calls for open and accurate dissemination of pain amelioration, under-treatment of pain remains a serious problem in the United States (American Association of Hospice & Palliative Medicine (AAHPM), 2002) and Europe (Müller-Schwefe et al., 2011).

The apparent gap between best practice guidelines and the actual practice of pain management urged us to look for barriers to provision of guideline-concordant services. We have identified from the literature three main barriers. The first relates to reluctance to discuss chronic pain, which is attributed in part to patients' tendency to accept pain as a natural, "to be expected," or an inevitable consequence of aging or disease as well as aversion to be labeled as a ―complainer‖ (McNeill, 2003; Pautex, 2006). Unwarranted fears of addiction and side effects were additional patient concerns. These concerns and misunderstandings resulted in patients' reluctance to report pain or comply with a pain treatment regimen that involves opioid medication (Ward et al., 1993; Ward and Gatwood, 1994).

The second barrier is attributable to gender and racial disparities. Review of medical records from post-appendectomy operation patients revealed that female patients were given significantly lower initial doses of opioid analgesics than male patients (McDonald, 1994). A study of end-of-life pain management found that minority patients were much less likely to receive analgesics (Bernabei et al., 1998). Physicians' perceptions about minority patients and drug-seeking behavior has also been suggested to attribute to the withholding of narcotic pain relief among minority patients with long-bone fractures (Martin, 2000).

The third barrier could be due to the so-called interpersonal hot-cold empathy gap that occurs when one tries to make sense of the behavior of another who is in an affective state different from one's own (Loewenstein, 2005). Unless physicians are able to share the pain of others, physicians who medicate for pain are in a relatively cold, pain-free state, treating patients who are in a hot state of pain, which could result in underappreciation of patients' pain and hence undertreat it (Loewenstein, 2005). Thus it is important to have patients alert physicians to their pain concerns.

We aim to examine the effects of the above-mentioned barriers on whether pain is discussed and the amount of time spent addressing pain during routine office visits. We are aware of one study reporting the use of direct observation to study patient-physician interaction with respect to the treatment of cancer pain (Street, 2010), and another study on the content of primary care visits for back pain (Turner et al., 1998).

METHODS

Conceptual Framework

We apply an ecological approach to communication in medical encounters (Street, 2003; Aita et al., 2005) with the Institute of Medicine's definition of health disparities (Institute of Medicine, 2003) as our conceptual framework for this research. The ecological approach proposes that what unfolds during the interaction is a function of the complex interplay of multiple physician, patient, and contextual factors. The primary context within which physician-patient interactions occurs is the interpersonal context. That is, what unfolds

during the encounter depends on the interactants' goals, perceptions, and communicative skills and on how they coordinate their respective contributions to move the interaction forward. Other elements of context are important (e.g., culture, organizational, media) but only to the extent that they affect interpersonal communication processes. In this study, we focus on three main sources of potential influence on the way physicians and elderly patients discuss pain—the patients' characteristics (demographic and health status), physician demographic characteristics and supportiveness in communication style (Teresi et al., 2005), and the relational history between physician and patient (length in year(s) patient has seen the physician).

First, variability in physician-patient communication about pain may be uniquely related to the patients' characteristics and health status. For example, advanced age was associated with progressively lower probability of receiving analgesics for pain (Bernabei et al., 1998). Further, African Americans and other minorities were less likely to receive treatment for pain (Bernabei et al., 1998). Unique variation related to the extent to which patient characteristics and health status are discussed in these consultations may be due to one of two factors. One important factor is that, physicians may assume that pain is a more salient issue for certain patients (e.g., women, white patient) and thus will be more likely to initiate discussion of pain with these patients. If this is the case, this suggests evidence of either bias or presumption about the needs of some patients relative to others (Institute of Medicine, 2003). The second important consideration is that, variability in talk about pain may be a function of patient initiative to bring up the discussion, which may be associated with patient characteristics. For example, a patient who is experiencing pain is more likely to bring up the topic than one who is not. Therefore, we can expect that the severity of pain – measured by SF36 bodily pain scale (McHorney et al., 1994) – to be associated with the likelihood that a discussion about pain may occur during an office visit as well as the amount of time spent on that. Further, some patients may initiate discussion of pain because they are generally more inclined to be actively involved in expressing their opinions, questions, and concerns. These include patients who are more educated (Arora and McHorney, 2000; Street et al., 2005), white (Siminoff et al., 2006; Wiltshire et al., 2006), and female (Street et al., 1993; Hall and Roter, 1995).

Second, how a physician discusses pain with a patient may be related to the physician's style, which can be related to the physician's demographic characteristics. In addition, behavioral manifestation of being supportive of patients could be related to empathy. We expect that communications between more supportive physicians and their patients experiencing pain would have less hot-cold empathy gap (Loewenstein, 2005). All else being the same, we expect that physicians who are generally more supportive of their patients through their verbal and non-verbal behaviors during office visits to be more likely to address pain.

Finally, the relational history between physician and patient may influence discussion of pain. The length of the patient-physician relationship is sometimes referred to as continuity of care, measured by the number of years the patient had seen the physician (Waitzkin, 1985). We hypothesized that a long relationship may affect the chance that pain would be discussed and the length of time spent on discussing pain.

Empirical Analysis

This paper analyzes videotapes containing physician-elderly patient communications on pain management based on a convenience sample of office-based physicians and their older patients (Cook, 2002). The aim of the original study was to test the Assessment of Doctor-Elderly Patient Transactions (ADEPT) system and to examine the relationship between physician communication behavior and patient outcomes (Cook, 2002). The medical

practices included an academic medical group in the Southwest, a private managed care group in a Midwest suburb, and a number of fee-for-service solo practitioners in a Midwestern inner city in the United States. Only elderly patients were recruited due to the focus of the original study on the elderly population (Cook, 2002). Physicians and patients were informed that the videotapes would be used to study and improve patient-physician interaction, and that they would be archived for use by future researchers. Written informed consent was obtained from all participants involved in this study. All relevant institutional review boards approved the research protocol.

The recruitment effort resulted in a sample of 35 physicians, all of whom had completed their training at the time of the initial study. The focus of the study was mainly on primary care physicians which includes family medicine and internal medicine in the US. Among the physicians who participated in the study, 63% were internists, 29% were family practitioners, and 9% were in geriatrics and palliative medicine. Also, eligible patients were at least 65 years of age, identified the participating physician as their usual source of care, and prior to recorded interviews provided informed consent in accordance with the Institutional Review Board approved protocol. Patients participating in the study were identified from their primary care physicians' patient panels, however, patients' experience with pain was not a factor in their selection. When these patients came to the participating clinic for a visit, regardless of the nature of the visit (e.g., acute upper respiratory infection, routine checkup for diabetes), they were invited to participate in the study. If they expressed willingness to participate, informed consent was obtained and their visits were taped. Tapes with poor audio or video quality were excluded. As a result, we retained 385 videotaped visits. Nineteen of the visits were multiple visits between a few patient-physician dyads. Sensitivity analyses excluding these visits obtained similar results as the full sample. The analyses are based on all 385 visits.

Videotape Coding

Videotaped visits were coded to identify topics, determine talk time, and analyze the dynamics of talk. Coders were unaware of the purpose of this study. Further, several steps were taken to prevent coder drift and ensure reliability. Details on coding and assurance of reliability have been provided elsewhere (Tai-Seale et al., 2007).

Identifying Topics

We identified topics with an adapted multidimensional interaction analysis (MDIA) system, which codes an interaction directly from an audio- or video-recording of the visit based on topics sequentially introduced by patient or physician (Charon et al., 1994). Coders first carefully reviewed the entire video to determine the nature and number of topics raised. A topic was regarded as an issue that required a specific response by either party (Charon et al., 1994). We identified 36 mutually exclusive topics pertaining to six major content areas: biomedical, mental health, personal habits, psychosocial issues, patient-physician relationship, or other topics. Table 1 provides the list of major content areas and topics within each area. Figure 1 illustrates the conversation flow in a sequential topic map of one visit and the grouping of discussions into topics.

Talk Time, Topic Length, and Dynamics

The unit of analysis was *topic*. *Talk time* was the length of time a person spoke on a topic. Each person's talking time before the other started talking was recorded and then summed to form the total length of time each person spoke. Topic length was measured by the total time – either in talking or in silence as long as both parties were in the room – elapsed between the beginning and the end of all instances of a topic. Further, if they went back to a topic

later in the encounter, that discussion would be counted as an additional instance of the same topic that had been initiated earlier.

Supportiveness of Physician

The original study developed factor scales based on coding of the video recordings (Cook, 2002). Through factor analysis, several scales were formed. We use one of them that measures supportiveness of the physician based on our hypothesis that more supportive physicians may have smaller hot-cold empathy gaps with their patients and that they would be more likely to address patients' pain as well as create communicative environments that encourage patient expressions of concerns. Items in that scale included the following: physician touches patient, expresses emotion, elicits patient's feelings, gives support to the concerns of patient, makes empathic statements, and expresses compassion for patient's difficult situation. The pattern matrix coefficients ranged from .22 to .70 for the factor, with about two thirds of the items with correlations of .40 and above. Most items related to the way in which the physician elicited information about the patient's needs. Details on the development and psychometric properties of the factor have been reported elsewhere (Teresi et al., 2005).

Survey Data

Prior to the visit, patients were surveyed for demographics and the purpose of the visit. Following the taping of the visit, patients were given the SF-36 (Ware et al., 1995). Physicians completed the sociodemographic survey at the beginning of the study. Physicians were not informed of the patient's SF36 bodily pain results nor did they have access to patient survey data. Racial and gender concordance variables measure the potential of racial, gender- and age-based disparities. We also explored the role of age concordance because of its potential to approximate empathy gap, with the assumption that individuals with similar ages may have similar experiences with pain and illness events.

Empirical Approach

We used a logit regression model to examine the probability of having a discussion on pain during a patient visit. The right hand side variables included the following: patient characteristics: SF36 bodily pain scale, (Bertakis et al., 1993; McHorney et al., 1994; Bertakis et al., 2004), education (whether patient had more than high school education) (Waitzkin, 1985); physician characteristics: specialty (family medicine versus other), years in medical practice, and supportiveness (Teresi et al., 2005); demographic concordances as measured by gender, race, and age concordance. Age concordance was defined as 1 if the age difference between patient and physician was less than or equal to 10 years. We also controlled for the presence of patient's companion and the years of patient-physician relationship (Waitzkin, 1985).

A survival model analyzed the likelihood that the pain topic would end, given its initiation and time spent on it. To test duration dependence, we used the Weibull proportional hazard function (Cleves et al., 2004). This approach allows the analysis of the influence of changes in key explanatory variables on length of time spent on a pain topic in a visit (Tai-Seale et al., 2007). In addition to the right hand side variables used in the logit model, we also included some topic-level variables in the survival model. To test the effect of time constraints, we introduced several variables for the order in which the pain topic was initiated during the visit. Assuming that the time constraint was lowest for the first topic in a visit, we used that as the control variable. Three binary variables captured whether a topic was the second or third topic, the 4th to 6th topic, or the 7th or higher topic, respectively. To account for patient initiative, we used a binary variable for patient-initiated topics. We also included a variable for the number of instances in a topic.

RESULTS

Table 2 shows the characteristics of study populations and descriptive information on visits and pain topics. The average age of patients was 74 years (minimum, 65; maximum, 91). Sixty-six percent of patients were female, and 80% were white. Regarding racial concordance, 79% of the patient-physician pairs were both white; 9%, white physicians and non-white patients; 2%, non-white physicians and white patients, and 10%, non-white patients and physicians. Regarding gender matching, 49% of the dyads contained a male physician and female patient; only 4% had a female physician and a male patient. Of physician-patient dyads, 18% were both females; 29%, both males. Of the dyads, 15% were age concordant, i.e., the patient and physician were within 10 years of each other's age. Patient companions were present in 20% of the visits. Forty-three percent of the patients had at least high school education, and 26% of the physicians were in family medicine.

Due to the skewness of the distributions of the time variables, we report their median values. The median length of visit was 15.7 minutes. The average number of topics in a visit was 6.5 (median, 6; minimum, 1; maximum, 12). The median length of discussion on pain was 2.3 minutes; average, 3.4 minutes (standard deviation, 3 minutes, minimum, 6 seconds; maximum, 15.4 minutes). The median length of physician's talk time was 0.8 of a minute (average, 1.5 minutes). The median length of patient's talk time on pain was 1 minute (mean, 1.48 minutes). A large proportion of visits contained discussions of pain. Of 385 visits, 48% involved at least one discussion of pain: 139 visits contained one pain topic, 38 visits had two pain topics, and 7 visits had three pain topics. The multiple pain topics involved pain in different locations in the body, e.g., shoulder, abdominal, and knee. Patients initiated 55% of the discussions on pain. Of all pain discussions, 24% occurred as the first topic of the visit, 31% as the 2nd or 3rd topic, 31% as the 4th, or 5th, or 6th topic, and 14% as the 7th or later topic. The average value of the supportiveness scale was 41 (minimum, 16; maximum, 71; s.d., 8). Bivariate analyses revealed that, on average, visits with at least one pain topic lasted significantly longer (19 minutes) than visits without any pain topic (16 minutes, p<0.01) (not tabulated).

Results from the logit regression and duration model analysis are shown in Table 3. At the conventional statistical significance level, only three factors were significantly associated with the odds of having a discussion about pain: physician's supportiveness, gender concordance, and the severity of pain patient was experiencing measured by the SF36 bodily pain scale. An incremental increase in the supportiveness scale was associated with a 3% higher likelihood of having a discussion on pain. Dyads with different gender were 64% more likely than dyads with same gender to have a discussion about pain (p<0.05). Less suffering from bodily pain (higher SF36 bodily pain score) was associated with a slightly lower odds (OR=0.97, p<0.05) of having a pain discussion.

The duration analysis model illustrated, given an occurrence of a discussion about pain, the factors associated with the length of the discussion. We present both hazard ratios and the percent age differences calculated from the hazard ratios. The conversion from hazard ratios to percent differences was delineated elsewhere. The results reveal that time constraints were significantly associated with the length of discussion. Compared with pain topics that were the first topic of the visit when time pressure is presumably lower, pain topics occurring as the 2nd or 3rd topic were 32% shorter (or had a 68% higher hazard of ending, HR=1.68, p<0.05). Pain topics that occurred as the 4th to 6th topics were 44% shorter (p<0.01); those as the 7th or later topic. 68% shorter (p<0.01). Each increment in the number of instances of the topic was associated with a 30% increase in the length of discussion. Severity of the pain as measured by the SF36 pain scale did not have a significant effect on

the length of the discussion. Regarding racial concordance, the length of discussion among different race dyads was 24% shorter (p<0.05) when compared with same-race dyads.

DISCUSSION AND CONCLUSIONS

This study contributes to the literature in three main areas. The first contribution is the finding on the short amount of time spent on discussing chronic pain with older adults – the median length is only 2.3 minutes (standard deviation= 3 minutes, minimum=6 seconds, maximum=15.4 minutes) for the combined talk time by physician and patient. When we separate out the time spoken by physician versus patient, we find that physicians spoke for less than a minute (0.8 minute) whereas patients spoke for 1 minute. This is the first evidence of time spent on pain management which can explain the under-treatment of pain in primary care settings. The second contribution is the high prevalence of chronic pain discussion among older patients in usual office visits in primary care – 48% of the visits involved at least one pain topic. The third contribution is the priority given to discussing chronic pain – 55% of the chronic pain topics were raised during the first three topics of the visit with older patients. Despite the importance of chronic pain that can be inferred from the prevalence and the priority, the actual amount of time spent on chronic pain is quite minimal.

The probability of having a discussion of pain was influenced to the largest extent by gender concordance, whereas racial concordance influenced the length of discussion. The positive effect of physician's manifested supportiveness on having a discussion about pain, though modest, still has implications for medical education and future research. Empathy and supportiveness should be and can be developed through training so that physicians can empathize with a patient's pain (without being overwhelmed) and effectively address the pain, as well as use supportiveness to encourage patient discussion of pain issues (Street, 2010). We note that the greater and more significant effects on pain discussion were associated with race or gender. It is interesting that gender discordant dyads were more likely to discuss pain. Approximately half of the dyads were male-physician–female-patient. This result may suggest that male physicians are more likely to show concern to female patients, or that female patients are more likely to discuss pain with male physicians. While it is encouraging that racial discordant dyads were as likely as concordant dyads to discuss pain, it is potentially concerning that racially discordant pairs spent far less time on pain.

The severity of pain patients suffered had a small but significant effect on the probability of pain discussion though not on the length of pain discussion. The lack of relationship between the severity of pain and the length of discussion deserves more research. It may suggest that the amount of information exchanged was independent of the severity of patient's pain. Future research should examine further the content of conversations about pain, e.g., was a pain scale used for assessment? Were non-pharmacological strategies recommended?

Time constraints consistently influenced the length of discussion on pain. Perhaps physicians became increasingly more aware of the limited amount of time left, prompting them to end the discussion. Clearly, the scarcity of clinical time is indisputable, and physicians must carefully manage the amount of time they spend with each patient. We need to look beyond the visit per se, however. Decline in health status could result in more frequent visits to physicians, which translate to increased spending of health care resources (Parchman et al., 2007). Financial incentives should be removed that reward physicians for more frequent visits rather than more effort in any one visit following evidence-based practices. Effective pain management is an integral and important aspect of quality medical care. Team-based care for patients with chronic conditions (Katon et al., 2010) may be

applicable for treating patients with chronic pain. The care manager (a nurse, for example) could assess the severity of patient's pain with a pain scale and apply pain behavior assessment tools (Keefe, 2000; Keefe and Smith, 2002) before the physician sees the patient in the office. Such a team approach could enable physicians to have the necessary information to provide effective treatments, rather than postponing to future visits when professional ability to engage with the patient may again be under time constraints.

Under-recognition and under-treatment of pain is not an isolated phenomenon, however. A large literature documents the similar under-recognition and under-treatment of depression (Tai-Seale et al., 2007), sleep (Gibson, 2004), and anxiety among patients (Kroenke et al., 2007). The lack of emphasis in the medical school curriculum on these subjects may be one reason for the deficiency. A 2000-2001 survey by the Association of American Medical Colleges found only 3% of schools had a separate, comprehensive course in pain management (Lukachko, 2009). In a survey of ten major Canadian universities with health science faculties, only one-third of the sample could identify time designated for teaching mandatory pain content (Watt-Watson et al., 2009). The Undergraduate Education Committee of the American Academy of Pain Medicine (AAPM) issued a position statement in 2000 (Chang et al., 2000) advocating a well integrated educational program on pain medicine, end-of-life-care, and palliative care in the core medical school curriculum, delivered by qualified multidisciplinary faculty. Future studies should examine if such a position statement has had any impact on curriculum and practice and take appropriate actions based on the findings.

This study has several limitations. First, we only had data on the reason for the visit (e.g., annual checkup, diabetes follow-up care, etc.), which does not provide information on the acuity of the chief complaint. Second, we do not have data on the number of chief complaints voiced by the patient, nor do we have explicit documentation of patient beliefs and expectations about their pain (Main et al., 2010). Both of these could affect the probability of and the length of discussion about pain. Third, the largely cross-sectional data does not contain information on the number of previous visits the patients have had with their primary care physicians. Although this limitation is shared by many studies using patient-physician encounter data, it is nevertheless a limitation that is only partially addressed by the variable on the number of years the patient has seen the physician. The fourth limitation is the location of the study. The observations were made in the Southwest and Midwest regions of the United States. Geographical variations in practice styles and culture could influence the generalizability of the findings to other parts of the US, let alone international practices such as in Europe where primary care is effectively equivalent to family medicine. We are mindful to note that the findings are only reflective of the behaviors of the study participants. The fifth limitation is the time of the study which took place between 1998 and 2000. The practice of pain management could have improved since then. The sixth limitation is related to how patients and physicians might have behaved differently due to the influence of video recording (Jones, 1992). While it is often thought of as a threat to validity, empirical research has shown the impact of video or audio recording to be rather minimal in affecting how patients and physicians behave for several reasons. First, being observed has increasingly become a routine part of medical training in the U.S. (Goodwin, 2001; Goodwin, 2003). Second, the literature consistently reports that both physician and patient subjects acclimate quickly to having an observer or recording device present (Coleman, 2000). A large number of studies support the validity, reliability and acceptability of direct observation for the evaluation of communicative and medical performance in daily practice (Beckman and Frankel, 1984; Siminoff et al., 1989; Siminoff and Fetting, 1991; Suchman et al., 1997; Marvel et al., 1999; Goodwin, 2001; DiMatteo et al., 2003; Goodwin, 2003; Heritage and Maynard, 2006). A systematic evaluation of direct observation has found satisfactory content validity, reliability, and acceptance among both

physicians and patients (Steward and Roter, 1990). Lastly, if being observed would make physicians behave more empathically or supportively, the results of this study would reflect a more favorable depiction of pain management than it actually is. The extent of under-treatment for chronic pain in real clinical practice would be even more pronounced than what has been reported in this study.

Acknowledgments

References

Aita V, McIlvain H, Backer E, McVea K, Crabtree B. Patient-centered care and communication in primary care practice: what is involved? Patient Education and Counseling. 2005; 58(3):296–304. [PubMed: 16122641]

American Association of Hospice & Palliative Medicine (AAHPM). Joint Statement: Promoting pain relief and preventing abuse of pain medications: A critical balancing act. 2002 Winter. AAHPM & 21 others

Arora N, McHorney C. Patient preferences for medical decision making: who really wants to participate? Medical Care. 2000; 38(3):335–341. [PubMed: 10718358]

Beckman HB, Frankel RM. The effect of physician behavior on the collection of data. Annals of Internal Medicine. 1984; 101(5):692–696. [PubMed: 6486600]

Bernabei R, Gambassi G, Lapane K, Landi F, Gatsonis C, Dunlop R, Lipsitz L, Steel K, Mor V, SAGE Study Group. Management of pain in elderly patients with cancer. Systematic Assessment of Geriatric Drug Use via Epidemiology. Journal of American Medical Association. 1998; 279(23): 1877–1882.

Bertakis KD, Azari R, Callahan EJ. Patient Pain in Primary Care: Factors That Influence. Physician Diagnosis Annals of Family Medicine. 2004; 2:224–230.

Bertakis KD, Callahan EJ, Helms LJ, Azari R, Robbins JA. The effect of patient health status on physician practice style. Family Medicine. 1993; 25(8):530–535. [PubMed: 8405802]

Bonham V. Race, ethnicity and pain treatment: striving to understand the causes and solutions to the disparities in pain treatment. Journal of Law, Medicine and Ethics. 2001; 29:52–68.

Chang HM, Gallagher R, Vaillancourt PD, Balter K, Cohen M, Garvin B, Charibo C, King SA, Workman EA, McClain B, Ellenberg M, Chiang JS. Undergraduate medical education in pain medicine, end-of-life care, and palliative care. Pain Med. 2000; 1(3):224. [PubMed: 15101887]

Charon R, Greene MG, Adelman RD. Multi-dimensional interaction analysis: a collaborative approach to the study of medical discourse. Social Science & Medicine. 1994; 39(7):955–965. [PubMed: 7992128]

Cleves, MA.; Gould, WW.; Gutierrez, RG. An Introduction to Survival Analysis Using Stata®College Station. Stata Press, StataCorp; 2004.

Cook, M. Final Report: Assessment of Doctor-Elderly Patient Encounters. National Institute of Aging; Grant No. R44 AG5737-S2

DiMatteo M, Robinson J, Heritage J, Tabbarah M, Fox S. Correspondence among patients' self-reports, chart records, and audio/videotapes of medical visits. Health Communication. 2003; 15(4): 393–413. [PubMed: 14527865]

Gibson GJ. Obstructive sleep apnoea syndrome: underestimated and undertreated. Br. Med. Bull. 2004; 72:49–65. [PubMed: 15798032]

Goodwin, M. The Hawthorne Effect in direct observation of primary care encounters; North American Primary Care Research Group Annual Meeting; Halifax, Nova Scotia. 2001;

Goodwin, M. Epidemiology and Biostatistics. Case Western Reserve University; Cleveland, Oh: 2003. Using Direct Observation in Primary Care Research - The Hawthorne Effect: Defining the Nature and Impact of the Presence of Research Observers on Patients and Physicians In Community Family Practice; p. 216

Green C, Baker T, Smith E, Sato Y. The effect of race in older adults presenting for chronic pain management: a comparative study of black and white Americans. Journal of Pain. 2003; 4:82–90. [PubMed: 14622719]

Green CR, Anderson KO, Baker TA, Campbell LC, Decker S, Fillingim RB, Kaloukalani DA, Lasch KE, Myers C, Tait RC, Todd KH, Vallerand AH. The Unequal Burden of Pain: Confronting Racial and Ethnic Disparities in Pain. Pain Medicine. 2003; 4(3):277–294. [PubMed: 12974827]

Hall JA, Roter DL. Patient gender and communication with physicians: results of a community-based study. Womens Health. 1995; 1(1):77–95. [PubMed: 9373374]

Heritage J, Maynard D. Problems and prospects in the study of doctor-patient interaction: 30 years of research in primary care. Annual Review of Sociology. 2006; 32:351–374.

Institute of Medicine. Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care. In: Brian, AYS.; Smedley, D.; Nelson, Alan R., editors. Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care. National Academies Press; Washington DC: 2003.

Jones S. Was There a Hawthorne Effect. American Journal of Sociology. 1992; 98(3):451–468.

Katon WJ, Lin EHB, Von Korff M, Ciechanowski P, Ludman EJ, Young B, Peterson D, Rutter CM, McGregor M, McCulloch D. Collaborative Care for Patients with Depression and Chronic Illnesses. N. Engl. J. Med. 2010; 363(27):2611–2620. [PubMed: 21190455]

Keefe F. Pain behavior observation: Current status and future directions. Current Pain and Headache Reports. 2000; 4(1):12–17.

Keefe FJ, Smith S. The Assessment of Pain Behavior: Implications for Applied Psychophysiology and Future Research Directions. Appl. Psychophysiol. Biofeedback. 2002; 27(2):117–127. [PubMed: 12206046]

Kroenke K, Spitzer RL, Williams JB, Monahan PO, Lowe B. Anxiety disorders in primary care: prevalence, impairment, comorbidity, and detection. Ann. Intern. Med. 2007; 146(5):317–325. [PubMed: 17339617]

Lavasky-Shulan M, Wallace R, Kohout F, Lemke J, Morris M, Smith I. Prevalence and functional correlates of low back pain in the elderly: The Iowa 65+ rural health study. J. Am Geriatr. Soc. 1985; 33:23–28. [PubMed: 3155530]

Loewenstein G. Hot-Cold Empathy Gaps and Medical Decision Making. Health Psychology. 2005; 24(4):S49–S56. [PubMed: 16045419]

Luggen AS. Chronic pain in older adults. A quality of life issues. Journal of Gerontological Nursing. 1998; 24:48–54. [PubMed: 9624967]

Lukachko, A. Pain education lacking in medical school curricula. Anesthesiology News. 2009. Retrieved August 24, 2010, from http://www.anesthesiologynews.com/index.asp?section_id=2&show=dept&issue_id=515&article_id=13132

Main CJ, Buchbinder R, Porcheret M, Foster N. Addressing patient beliefs and expectations in the consultation. Best practice & research. Clinical rheumatology. 2010; 24(2):219–225. [PubMed: 20227643]

Martin ML. Ethnicity and analgesic practice: An editorial. Annals of Emergency Medicine. 2000; 35(1):77–79. [PubMed: 10613943]

Marvel MK, Epstein RM, Flowers K, Beckman HB. Soliciting the patient's agenda: have we improved? Journal of American Medical Association. 1999; 281(3):283–287.

McDonald D. Gender and ethnic stereotyping and narcotic analgesic administration. Research in Nursing and Health. 1994; 17:45–49. [PubMed: 7907799]

McHorney C, Ware J, Lu J. The MOS 36-item Short Form Health Survey (SF-36): III. Tests of data quality, scaling assumptions, and reliability across diverse patient groups. Medical Care. 1994; 32:40–66. [PubMed: 8277801]

McNeill SS. The Hidden Error of mismanaged pain: a systems approach. Journal of Pain and Symptom Management. 2003; 28(1):47–58. [PubMed: 15223084]

Müller-Schwefe G, Jaksch W, Morlion B, Kalso E, Schäfer M, Coluzzi F, Huygen F, Kocot-Kepska M, Mangas AC, Margarit C, Ahlbeck K, Mavrocordatos P, Alon E, Collett B, Aldington D,

Nicolaou A, Pergolizzi J, Varrassi G. Make a CHANGE: optimising communication and pain management decisions. Curr. Med. Res. Opin. 2011; 27(2):481–488. [PubMed: 21194393]

Parchman ML, Pugh JA, Romero RL, Bowers KW. Competing Demands or Clinical Inertia: The Case of Elevated Glycosylated Hemoglobin. Annals of Family Medicine. 2007; 5(3):196–201. [PubMed: 17548846]

Pautex S, Gold G. Assessing pain intensity in older adults. Geriatrics & Aging. 2006; 9(6):399–402.

Reid M, Williams C. J C. Depressive symptoms as a predictor of disabling back pain among community-dwelling older adults. J Am Geriatr Soc. 2003; 51(12):1710–1717. [PubMed: 14687348]

Siminoff L, Fetting J. Factors affecting treatment decisions for a life-threatening illness: the case of medical treatment of breast cancer. Social Science & Medicine. 1991; 32(7):813–818. [PubMed: 2028276]

Siminoff L, Fetting J, Abeloff M. Cancer patient and physician communications: progress and continuing problems. Annals of Behavioural Medicine. 1989; 11:108–112.

Siminoff L, Graham G, Gordon N. Cancer communication patterns and the influence of patient characteristics: disparities in information-giving and affective behaviors. Patient Education and Counseling. 2006; 62(3):355–360. [PubMed: 16860520]

Steward, M.; Roter, D. Communication with Medical Patients. Sage Publications; 1990.

Street RL Jr. Communication In Medical Encounters: An ecological Perspective. Handbook of Health Communication. 2003; 20(1):63–89.

Street RL, Piziak VK, Carpentier WS, Herzog J, Hejl J, Skinner G, McLellan L. Provider-patient communication and metabolic control. Diabetes Care. 1993; 16(5):714–721. [PubMed: 8495610]

Street RLJ, Gordon H, Ward M, Krupat E, Kravitz R. Patient participation in medical consultations: why some patients are more involved than others. Medical Care. 2005; 43(10):960–969. [PubMed: 16166865]

Suchman AL, Markakis K, Beckman HB, Frankel R. A model of empathic communication in the medical interview. Journal of American Medical Association. 1997; 277(8):678–682.

Tai-Seale M, McGuire T, Colenda C, Rosen D, Cook MA. Two-Minute Mental Health Care for Elderly Patients: Inside Primary Care Visits. Journal of American Geriatric Society. 2007; 55(12):1903–1911.

Tai-Seale M, McGuire T, Zhang W. Time allocation in primary care office visits. Health Services Research. 2007; 42(5):1871–1894. [PubMed: 17850524]

Teresi J, Ramirez M, Ocepek-Welikson K, Cook M. The development and psychometric analyses of ADEPT: An instrument for assessing the interactions between doctors and their elderly patients. Annals of Behavioral Medicine. 2005; 30(3):225–242. [PubMed: 16336074]

Todd KH, Samaroo N, Hoffman JR. Ethnicity as a risk factor for inadequate emergency department analgesia. JAMA. 1993; 269:1537–1539. [PubMed: 8445817]

Turner JA, LeResche L, Korff MV, Ehrlich K. Back pain in primary care: Patient characteristics, content of initial visit, and short-term outcomes. Spine. 1998; 23(4):463. [PubMed: 9516702]

Vallerand AH, Polomano RC. The relationship of gender to pain. Pain Management Nursing. 2000; 13(Supp. 1):8–15. [PubMed: 11710147]

Waitzkin H. Information giving in medical care. Journal of Health and Social Behavior. 1985; 26(2):81–101. [PubMed: 4031436]

Ward S, Gatwood J. Concerns about reporting pain and using analgesics: A comparison of persons with and without cancer. Cancer Nurs. 1994; 17(3):200–206. [PubMed: 8055490]

Ward S, Goldberg N, Miller-McCauley V. Patient-related barriers to management of cancer pain. Pain. 1993; 52(3):319–324. [PubMed: 7681557]

Ware JE Jr. Kosinski M, Bayliss MS, McHorney CA, Rogers WH, Raczek A. Comparison of methods for the scoring and statistical analysis of SF-36 health profile and summary measures: summary of results from the Medical Outcomes Study. Medical Care. 1995; 33(4 Suppl):AS264–279. [PubMed: 7723455]

Watt-Watson J, McGillion M, Hunter J, Choiniere M, Clark AJ, Dewar A, Johnston C, Lynch M, Morley-Forster P, Moulin D, Thie N, von Baeyer CL, Webber K. A survey of prelicensure pain

curricula in health science faculties in Canadian universities. Pain Res Manag. 2009; 14(6):439–444. [PubMed: 20011714]

Wiltshire J, Cronin K, Sarto G, Brown R. Self-advocacy during the medical encounter: use of health information and racial/ethnic differences. Medical Care. 2006; 44(2):104–109.

Wojtasiewicz M. Damages compounded: Disparities, distrust, and disparate impact in end-of-life conflict resolution policies. American Journal of Bioethics. 2006; 6(5):8–12. [PubMed: 16997811]
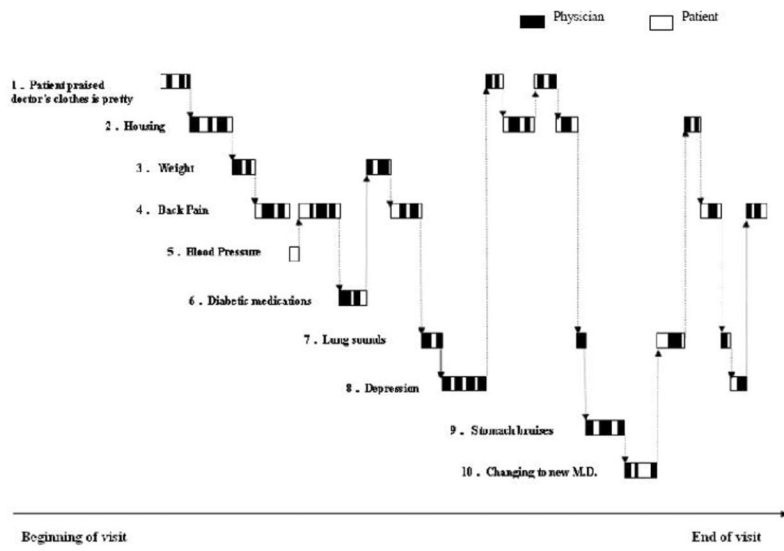
Figure 1.
Illustration of conversation flow in a sequential topic map of one visit and the grouping of discussions into topics.

Table 1

Characteristics of Visits and Study Populations (35 Physicians and 366 Patients in 385 Visits)

	% or Mean or Median
Pain Topic Characteristics (n=236)	
Topic on pain (of _# of topics)	9.4%
Patient initiated pain topic (n=129)	54.7%
Pain topic occurred as the 1st topic of the visit	23.7%
Pain topic occurred as the 2nd or 3rd topic	31.4%
Pain topic occurred as the 4th, or 5th, or 6th topic	30.5%
Pain topic occurred as the 7th or later topic	14.4%
Length of discussion on pain (minute)	2.3 (median)
Length of discussion on pain by pysician (minute)	0.82 (median)
Length of discussion on pain by patient (minute)	1.0 (median)
Patient Characteristics (n=366)	
Female	66.1%
White	80.0%
More than high school education	42.9%
Age	74.4 (mean)
SF36 bodily pain scale	41.4 (mean)
Physician Characteristics (n=35)	
Family medicine practice	25.7%
Years in practice	20.0 (mean)
Visit or Dyad Characteristics (n=385)	
Length of visit (minute)	15.7 (median)
Number of topics in a visit	6.5 (median; min=l, max=12)
Pysician's supportiveness factor scale	40.9 (mean)
Years of patient-pysician relationship	6.5 (mean)
White pysician and wite patient	78.7%
White pysician and non-white patient	9.4%
Non-white pysician and white patient	2.3%
Both non-white	9.6%
Male pysician with female patient	49.1%
Female pysician with male patient	3.9%
Both females	18.4%
Both males	28.6%
Visit with at least one patient's companion	20.0%

Table 2

Factors Associated With Probability of Having a Pain Discussion and Length of the Discussion

	Probability of Having a Pain Discussion	Length of Discussion on Pain	
	OR	Hazard Ratio	% Diff
Topic order (2nd or 3rd)	NA	1.68 *	−32
Topic order (4th, 5th, or 6th)	NA	2.22 **	−44
Topic order (≥7th)	NA	4.62 **	−68
Patient had more than high school education	0.91	0.73 *	25
SF36 bodily pain	0.97 *	1.01	
Pysician practiced family medicine	0.75	1.14	
Pysician's years in practice	1.00	1.00	
Pysician's supportiveness	1.03 *	1.00	
Years of patient-pysician relationship	0.98	1.03 **	−2
Number of instances per topic	NA	0.73 **	26
Patient initiation of pain topic	NA	1.05	
Presence of patient's companion	1.10	0.91	
Patient and pysician from different race (control: same race)	1.08	1.46 *	−24
Patient and pysician of different gender (control: same gender)	1.61 *	0.91	
Patient and pysician of dissimilar age (control: ≤10 years of age difference)	1.51	0.83	
Shape parameter	NA	1.35	
N	364	227	

Note:

NA: topic-level variables, not included for visit-level analysis

*
P<0.05

**
p<0.01

Table 3

Factors Associated With Probability of Having a Pain Discussion and Length of the Discussion

	Probability of Having a Pain Discussion	Length of Discussion on Pain	
	OR	**Hazard Ratio**	**% Diff**
Topic order (2nd or 3rd)	NA	1.68 [*]	−32
Topic order (4th, 5th, or 6th)	NA	2.22 [**]	−44
Topic order (≥7th)	NA	4.62 [**]	−68
Patient had more than high school education	0.91	0.73 [*]	25
SF36 bodily pain	0.97 [*]	1.01	
Pysician practiced family medicine	0.75	1.14	
Pysician's years in practice	1.00	1.00	
Pysician's supportiveness	1.03 [*]	1.00	
Years of patient-pysician relationship	0.98	1.03 [**]	−2
Number of instances per topic	NA	0.73 [**]	26
Patient initiation of pain topic	NA	1.05	
Presence of patient's companion	1.10	0.91	
Patient and pysician from different race (control: same race)	1.08	1.46 [*]	−24
Patient and pysician of different gender (control: same gender)	1.61 [*]	0.91	
Patient and pysician of dissimilar age (control: ≤10 years of age difference)	1.51	0.83	
Shape parameter	NA	1.35	
N	364	227	

Note:

NA: topic-level variables, not included for visit-level analysis

[*] P<0.05

[**] p<0.01