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## DEVELOPING A MODEL OF CLIENT SATISFACTION WITH A REHABILITATION CONTINUUM OF CARE

Melba G. Custer

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Dr. Ruth A. Huebner, Major Professor

Dr. Anne Olson, Director of Graduate Studies

DEVELOPING A MODEL OF CLIENT SATISFACTION  
WITH A REHABILITATION CONTINUUM OF CARE

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DISSERTATION

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A dissertation submitted in partial fulfillment of the  
requirements for the degree of Doctor of Philosophy in the  
College of Health Sciences  
at the University of Kentucky

By

Melba G. Custer

Lexington, Kentucky

Director: Dr. Ruth A. Huebner, Professor of Occupational Therapy

Lexington, Kentucky

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## ABSTRACT OF THE DISSERTATION

### DEVELOPING A MODEL OF CLIENT SATISFACTION WITH A REHABILITATION CONTINUUM OF CARE

Client satisfaction is an important outcome indicator because it measures multiple domains of the quality of healthcare and rehabilitation service delivery. It is especially important in occupational therapy because it is also client-centered. There are multiple domains of satisfaction and findings described in previous research; however, there is no single standard of measuring client satisfaction or any single working model describing the relationship among variables influencing satisfaction. This research was designed to apply a measure of satisfaction in rehabilitation and to develop a working model of satisfaction.

This study was an exploratory and predictive study using a large existing dataset to test a working logic model of client satisfaction, determine the best predictors of satisfaction, and then to revise the model for future research. After developing the Satisfaction with a Continuum of Care (SCC) in a pilot study, the SCC was completed by 1104 clients from a large Midwest rehabilitation hospital. The SCC results were paired with administrative data with client demographics, functional status, and measures of the rehabilitation process. Six research questions on the predictors of satisfaction with client-centeredness and clinical quality were answered using logistic regression.

Significant predictors of satisfaction were having a neurological disorder, total rehabilitation hours, and admission to rehabilitation within 15 days of onset. The most robust and consistent predictors of satisfaction in this study were aspects of functional status as measured by the Functional Independence Measure especially improvement in overall and self-care functioning.

The results in the study were consistent with some previous research and inconsistent with others. The finding that improvements in functional status were highly predictive of satisfaction supports the worth that clients place on rehabilitation results including the self-care improvements focused on by occupational therapy.

This study was a partnership involving occupational therapy and a rehabilitation hospital. The finding that changes in self-care function were predictive of satisfaction

was intended to isolate the effects of OT. There is a need to demonstrate outcomes and link these to occupational therapy and other rehabilitation disciplines to continue to identify best practices and contribute to the rehabilitation literature.

**KEYWORDS:** Outcomes, Predictive Modeling, Occupational Therapy, Satisfaction Measures, Logistic Regression

Melba G. Custer

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Student's Signature

June 19, 2012

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Date

DEVELOPING A MODEL OF CLIENT SATISFACTION  
WITH A REHABILITATION CONTINUUM OF CARE

By

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## CHAPTER ONE:

### INTRODUCTION

#### **Background and Need**

Patient-centered or client-centered care has been an important focus in occupational therapy for a number of years and endorsed as a fundamental principle from the profession's inception. Client-centered care as related to client satisfaction is now a term frequently used in health care service delivery as an emphasis or indicator of quality and used in accreditation. In most medical or healthcare settings, patient satisfaction has become an important quality outcome indicator of services provided (Yellen, Davis, & Ricard, 2002). Satisfied clients are more likely to be compliant, have higher quality of life (QOL) and better outcomes and are more likely to return to the same provider or institution for future care (Keith, 1998). The increased emphasis on satisfaction in the literature may signal a new emphasis on the client as an active consumer rather than a passive recipient of healthcare (Speight, 2005). The American Nurses Association (1999) defined patient satisfaction as measuring patient/family opinion regarding care received from nursing staff (ANA, 1999). From a rehabilitation perspective, Beattie, Dowda, Turner, Michener, and Nelson (2005) defined patient satisfaction as a "construct reflecting the overall experience of an individual receiving examination and treatment in a given environment during a specific time period" (p. 1047).

Client satisfaction is most often measured using self-report rating scales. Satisfaction ratings are subjective, distinct from observable events of care that can be observed objectively and factual; it is a personal evaluation of the quality of care received. Thus, satisfaction is a highly client-centered indicator; only the client can perceive and report their satisfaction. Satisfaction refers generally to the match between

expectations and real circumstances or treatment. If the match between expectations and service circumstances is equal, the client is generally satisfied or conversely if the service circumstances fall below expectations, the client is dissatisfied. From a client-centered perspective, “Optimal clients outcomes occur when clients and therapist work in partnership throughout the therapy process and focus on the resolution of client-defined occupational performance issues” (Law, Baptiste, & Mills, 1995, p. 253).

Occupational therapists contribute to improving overall client outcomes as part of their everyday practice. Outcomes research is designed to describe the effectiveness of treatment interventions (Ellenberg, 1996), demonstrate the value of health care services (Foto, 1996), and document its relevance to the client’s needs (Kielhofner, Hammel, Finlayson, Helfrich, & Taylor, 2004). Client satisfaction as an outcome primarily demonstrates the relevance of the treatment, but may be related to both the effectiveness and value of occupational therapy and the larger field of rehabilitation. Despite the strong support for measuring client satisfaction, there has been less published research regarding satisfaction in rehabilitation as documented by numerous authors (Elliott-Burke & Pothast, 1997; Grisson & Dunagan, 2001; Heinemann, Bode, Cichowski, & Kan, 1997; Keith, 1998; Mancuso et al., 2003). Currently there is no standardized way of measuring satisfaction with rehabilitation services overall, but more work has been completed in physical therapy to develop a few standard measures (Beattie, Dowda, Turner, Michener, & Nelson, 2005; Goldstein, Elliott, & Guccione, 2000; Monnin & Perneger, 2002).

There are conceptual models such as The Institute of Medicine (IOM; 2001) model that describe domains of satisfaction with the quality of healthcare, but these domains have not been verified or translated into standardized client satisfaction

measures. There is a vast number of studies demonstrating the correlates or predictors of client satisfaction, but the results are inconsistent and sometimes contradictory (Hall & Dornan, 1988; Ottenbacher et al., 2001; Tooth et al., 2004). The relationship between the provider and the client is frequently found as a predictor of satisfaction, but other factors such as age, gender, marital status, type of disability, functional gain or length of stay are inconsistently found to predict client satisfaction. Most satisfaction studies are designed for a specific setting, a specific diagnosis or disability group, or to test the impact of a professional group. There has been relatively limited development of logic or path analysis models that can be tested in research.

The development of models to explain client satisfaction is in keeping with the American Occupational Therapy Association (AOTA) research agenda identified in the Centennial Vision (AOTA, 2007); it is critical to apply methods of computational modeling to predict outcomes of clients in rehabilitation facilities (Brown, 2005). Predictive modeling is supported by the Institute of Medicine (2006a) as a method to advance knowledge and clarify theory. Through designing and testing a model of client satisfaction, the best predictors of satisfaction in a rehabilitation setting will help occupational therapy deliver services valued by consumers, at a critical time in the review of health service delivery. Occupational therapy with its long history of truly living the phrase “client-centered” as a core value can be at the forefront of changes to policy guidelines that affect our professional stature and overall reimbursement of services. Through implementation of the Centennial Vision (AOTA, 2007) occupational therapists must seek to use best practices and address pertinent issues in rehabilitation.

This research was implemented in partnership with a community-based rehabilitation hospital; such a partnership is crucial in linking educational needs, research, and practice for understanding and improving functional client outcomes. A collaborative effort between occupational therapy and a rehabilitation agency seeking to develop outcome measures that are client-centered is also in keeping with the strategic plan of AOTA to promote an awareness of trends in reimbursement and link research to practice. Determining means of evaluating outcomes of OT intervention and prevention strategies in an interdisciplinary and translational context is a critical component in any model and recommended in the Centennial Vision.

An explanatory caveat here is intended to help the reader with language challenges. With acceptance of The World Health Organization's *International Classification of Functioning, Disability, and Health* (ICF) (WHO, 2001) model in healthcare, the concept *patient* is understood as an interchangeable term used to infer *clients*. Although published works often refer to *patients*, *clients* are the inferred population and some more recent authors refer to *consumers* of healthcare or rehabilitation. Although the term *patient* is felt to be a pejorative term that implies a passive recipient of services, the term client is sometimes criticized as failing to capture the power differential in service delivery. Because of this ongoing debate, in this paper, the term used in the published literature that was reviewed was included, but *clients* or *consumers* of healthcare are the population of interest; these two terms are interchangeable. The term *client* is used consistently in reporting the findings of this present study.



### **Statement of the Problem**

Client satisfaction is an important outcome indicator because it is a client-centered outcome and measures multiple domains of the quality of healthcare and rehabilitation service delivery. It is especially important in occupational therapy. There are multiple domains of satisfaction including external and internal factors and multiple domains of satisfaction outcome including safety, timeliness, and efficiency of service delivery. However, there is no single standard of measuring client satisfaction nor any single logic or working model to describe the relationship among factors and domains in influencing satisfaction. Current research is diverse but limited by the lack of a cohesive model that crosses disciplines, settings, and long-term rehabilitation. This research is designed to develop and test a measurement of satisfaction in rehabilitation and to develop a working logic model of satisfaction.

### **Statement of Purpose**

This is an exploratory study using a large existing dataset from a community-based rehabilitation center to test a working logic model of client satisfaction, determine the best predictors of satisfaction, and then to revise the model for future research.

### **Research Questions and Design**

1. How do client demographic variables contribute to models of client satisfaction in rehabilitation?
2. How does functional status and self-care functional status at admission and discharge contribute to models of client satisfaction in rehabilitation?
3. How does the client's medical status (e.g., how sick they are, medical complications) contribute to models of client satisfaction in rehabilitation?

4. How does the variation in rehabilitation processes contribute to models of client satisfaction in rehabilitation?
5. How do the client's gains and discharge situation relate to models of satisfaction in rehabilitation?
6. How do Occupational Therapy services contribute to models of satisfaction in rehabilitation?

The dissertation research builds on a pilot study and development of a client satisfaction survey with a large rehabilitation hospital. The research is a non-experimental design using an existing dataset in a descriptive and comparative study. The dissertation study tests a working model of client satisfaction and then uses the results to refine that model. This pilot and dissertation study was implemented in partnership with a regional rehabilitation hospital (RRH).

Two studies are included. The first study stems from a pilot of a measure of client satisfaction developed by the RRH and tested by the author. Based on the results of the pilot, the satisfaction measure was redesigned; results of that pilot study are reported here. The revised instrument was then administered to clients who were receiving rehabilitation services for the dissertation study. The results of the dissertation study will be used to revise a working model of client satisfaction.

### **Contribution to the Field**

Rehabilitation is an important component of the health care process. More individualized, it truly embodies client-centered occupational therapy service delivery. Yet, to be effective, clients must value and desire OT services. Understanding predictive modeling about client satisfaction can impact the profession of occupational therapy in status and positioning to achieve the goals within the Centennial Vision (AOTA, 2007).

## CHAPTER TWO:

### LITERATURE REVIEW

In this chapter, an extensive review of the literature supporting this research is included. The discussion is divided into three major sections. In section one, the conceptual model for outcome measurement of client satisfaction used in this study is explored. The second section reviews the background literature on client satisfaction. Section two includes a review of literature defining client satisfaction, literature on measuring client satisfaction and its broad application in healthcare, and findings from the literature on predictors of client satisfaction specific to rehabilitation. In the third section, the literature on model building, scale development, the Functional Independence Measure (FIM) and statistical techniques used in the study are reviewed.

#### **Conceptual Model for Client Satisfaction Outcomes Measurement**

##### **Conceptual Model for Outcomes Measurement**

Kohn, Corrigan, and Donaldson (2000) developed a model for improving healthcare that was considered by the regional rehabilitation hospital, a partner in this dissertation research, as a guide for measuring outcomes that ultimately might be used in *payment for performance* systems. The rehabilitation hospital sought to measure client outcomes in a client-centered manner using a customer satisfaction with outcomes survey. Consequently, the IOM model and its development were used in this present study as the conceptual framework guiding instrument development and building models of client satisfaction. Although the IOM focuses on the broad concepts of healthcare, the concepts apply to rehabilitation as a component of the broader healthcare delivery system.

The Committee on the *Quality of Health Care in America* was formed in 1998 (Kohn, Corrigan, & Donaldson, 2000) by congressional mandate to develop strategies that would result in the improvement in the quality of national healthcare over the next decade. The initial report (Kohn et al., 2000) identified quality issues affecting patient safety in healthcare and found for example that every year medication errors alone caused more patient deaths than all workplace injuries combined. They estimated that adverse drug events alone cost \$2 billion annually. Even in the most prestigious hospitals, at least 2% of patients experienced a preventable adverse drug event. Kohn et al. (2000) concluded that due to this dire state, healthcare needed to be reinvented in major ways beginning with improvement in patient safety and the delivery of care. Needed changes would affect physicians, hospitals, and other health care organizations that were currently operating as silos, providing individual care without benefit of complete or comprehensive information on a patient's condition, medical history, services provided in multiple other settings, and medications provided by other providers (Kohn et al., 2000). Achieving these changes would require involvement of all the stakeholders in the healthcare system from professionals to governing boards and should include consumers of services to create a more client-centered service-delivery system.

In a seminal report, *Crossing the Quality Chasm: A New Health System for the 21st Century* (IOM, 2001), the IOM proposed six core domains for quality healthcare improvement: safety, effectiveness, client-centeredness, timeliness, efficiency, and equitability. Improved safety would result from avoiding injury to patients/clients while they were seeking medical care. Effectiveness would mean consistently using evidence-based best practices at any level of care provided. Patient-centered/client-centered

healthcare would be responsive and respectful of client needs and values; the client's needs would guide decisions. Care would be provided with timeliness by reducing wait times and delays. Efficiency would be avoiding waste of supplies, equipment, ideas, and energy. Equitability or equitable care would be consistent quality of care without variation from place to place or because of personal characteristics such as gender, race or ethnicity, geographic location, or socioeconomic status.

The findings from the IOM studies (2001; Kohn et al., 2000) suggested that healthcare systems that achieved improvements in the six areas would be globally more client-centered that is, more responsive to meeting the needs of clients and providing better quality care. Clients would benefit from safer care that was more responsive and tailored to them when receiving an array of services across a coordinated continuum of care. Improvement in the six aims would also benefit providers who would experience increased confidence that client care was more reliable, effective, responsive, and coordinated than before. Through adopting an emphasis on the six aims, an organization would engage in better practices and incorporate performance and outcome measurement to guide continual performance improvement and have data to document accountability (IOM, 2001).

In subsequent reports, the IOM (2006a, 2007) condensed the six-aim model into three major categories that conceptualize measurement of quality healthcare as including: clinical quality, patient/client centeredness, and efficiency. The IOM identified clinical quality as encompassing four of the previously identified aims of effectiveness, safety, timeliness, and equity. Patient centeredness remained identified as an attribute of care reflecting the informed preferences of the client. The final domain efficiency was

defined as a high level of quality services given resource limitations (IOM, 2007). Both the six domain and the three domain models of health care delivery were used in conceptualizing this research and testing the data.

The IOM (2001) noted that to date, the most frequently and effectively used measure of quality and quality improvement relied on data about healthcare service reimbursement. The use of payment system data had been helpful to identify overused systems or procedures, organizations that frequently ordered high cost procedures and geographic trends in the provision of healthcare. These findings highlighted the power of consistent data. However, use of reimbursement data failed to consider variations in the quality of service delivery for multiple providers. Overall, there needed to be measures of efficient and cost effective care that were also client/patient-centered, and consistent with better quality of clinical care.

In response to these limitations in measurement, the IOM (2006b) evaluated over 800 instruments measuring healthcare quality and found that none of the instruments or measures incorporated all of the six aims of quality improvement. Current measures had numerous limitations. The existing instruments focused on single episodes or single environments of care rather than measuring across settings, levels of care, or between departments. Existing instruments were provider-centered, asking questions about satisfaction with the healthcare process or techniques rather than client-centered, asking questions about experience, results, and having choice or input (IOM, 2006b). Existing instruments often failed to address clients at the extreme ends of the healthcare continuum (e.g., children and end of life care) and most measurement instruments were provider-centered and provider specific with measures unique to each setting or

discipline. Measures needed to incorporate longitudinal changes over time. This is especially true in rehabilitation that may progress from acute injury to acute care to rehabilitation hospitals to rehabilitation delivered at home.

After the IOM (2006b) review, they suggested a new emphasis in measurement that would include these limitations in the scope of measurement. Furthermore, they anticipated that as Medicare moved towards a payment-for-performance system, ongoing quality improvement as measured across a continuum of healthcare should be aligned with the previously mentioned six aims (IOM, 2007).

An ideal situation would be that quality healthcare improvement and the yet to be devised gold standard of measurement would incorporate the six aims from the IOM (2001). The opinions and suggestions of the Institute of Medicine (IOM) have been powerful in shaping healthcare policy and much has changed since the first report. However, the primary mission continues to be improving the nation's health and healthcare system (IOM, 2001). Many of the studies and reports issued by the IOM originated as Congressional mandates or as mandates from other governmental agencies concerned with healthcare policy (IOM, 2001). As this process has unfolded, recent healthcare legislation has allocated substantial funding for health care data systems to move toward greater accountability and availability of client/patient information at the point of service delivery.

The pilot study (see Chapter 3) and the dissertation study sought to develop, test, and apply a client-centered measure of all six IOM aims based on client satisfaction. The measurement design considered the limitation of current measures as described by the IOM and sought to develop a measure that could be used in multiple settings with

varying client groups provided rehabilitation services over time. In the data analysis for this study, multiple other factors suggested by the IOM (2006b) were considered. The concept of measuring comprehensively and accurately between settings and providers was used. The dataset paired satisfaction data with indicators to measure subgroups or confounding variables such as age, changes in pain, changes in FIM score, and neurological and non-neurological diagnoses. The IOM recommended that baseline performance standards need to be established (IOM, 2007) to provide a point of origin from which to start from when measuring provider or system wide improvement. The present study sought to develop such a measurement system and model useful for rehabilitation.

## **Literature Review on Client Satisfaction**

### **Methodology for Literature Review**

The next section covers specific literature on client satisfaction. The literature of client satisfaction in healthcare and rehabilitation including occupational therapy is very extensive and diverse. For example, an Internet search using the term ‘patient satisfaction with healthcare’ on August 5, 2011 returned 24,300,000 hits. A modified search to include ‘client satisfaction with rehabilitation’ only returned 3,540,000 hits. Consequently, the scope of the literature review covered a sample of articles most relevant to this dissertation study. This search was limited to articles written within the past 10 years on satisfaction that tested the relationship between satisfaction and FIM (Functional Independence Measure) scores, the use of one or more rehabilitation therapies, or used logistic regression to test the predictors of satisfaction. From these articles, historic or seminal articles frequently cited by authors were identified and included. Articles were reviewed until a point of saturation, meaning that there was no



new information coming from additional articles. The literature review was divided into sections and synthesized. Some articles were also summarized in table form. Results of the literature review were used to develop the original working model of client satisfaction.

### **Evolution of Client Satisfaction and Outcomes Measurement**

In this section, the evolution of conceptualizing and measuring satisfaction is explored. The historical background of this approach forms the foundation of measurement. The evolution proceeds from a medical model with a physician and nursing emphasis to the broader field including rehabilitation especially satisfaction measures in physical therapy. From this literature, important attributes of patient satisfaction that tie into the current research are examined and include concepts of clinical quality, client centeredness, and efficiency.

**The foundations of outcomes measurement.** An early pioneer in examining the assessment of healthcare quality, Donabedian (1966) proposed that quality was a reflection of values and goals current in the medical care system. At that time, medical care and the evaluation of healthcare quality were being examined at a physician-patient level of interaction. One indicator of the quality of medical care was the restoration of function or recovery as the most important outcome. This indicator implied an acute focus; people returned to health or recovered. Measures of return to health, restoration of function and avoidance of other poor outcomes (e.g., death) were concrete and easier to quantify. As the conceptualization of outcomes evolved, other outcomes such as patient attitudes and satisfaction provided new challenges because of their subjectivity (Donabedian, 1980).

Another assessment of quality was examining the process of care rather than the outcomes (Donabedian, 1966). Process of care encompasses the concepts of best practice or “good” medicine; it refers to the events in the intervention. This is not to imply a separation of ends (outcomes) and means (process), but a term to describe care on a continuum.

A third approach in assessing healthcare quality according to Donabedian (1966) was assessment of structure or the settings in which care took place. This assessment implied that good settings and instrumentation meant good medical care. This notion was an early precursor to the belief that good resources mean good clinical quality of care. In fact, these three levels of analysis are part of standard logic models now used to evaluate programs. Donabedian’s work was the foundation for model building. Currently, outcomes are often separated into short-term or proximal outcomes and long-term or distal outcomes.

In assessing quality of care, a necessary focal point of both physicians and other healthcare practitioners is in both technical and interpersonal performance, according to Donabedian (1988). Technical performance means arriving at appropriate strategies and then having skill in implementing them with a patient from a best practice perspective (Donabedian, 1988). Also, integral is the interpersonal relationship, crucial to collaborating with the patient, which is the means by which technical care is, implemented (Donabedian, 1988).

Once upon a time satisfaction measurement was discounted as a “soft indicator” used by marketing departments to sell health care. However, satisfaction has now become an integral part of strategic management of healthcare quality (Urden, 2002).

Changing demographics, including the characteristics of baby boomers, has resulted in more critical consumers of healthcare who demand excellence; payers are following the trend (Urden, 2002). Though satisfaction is generally reported high in most studies, the mode and timing of data collection have compounded the problem of definition and standardization of measurement in satisfaction measurement. Measurement that is specific to actual care and services that is timely in nature will reveal better outcomes for facilities and consumers of healthcare (Urden, 2002).

**Health care satisfaction and outcomes.** In any medical or healthcare setting, patient satisfaction has become an important quality outcome indicator of services provided (Yellen et al., 2002). Defining client satisfaction is simple yet complex. It is a client-centered indicator, meaning that only the client can know this and report it. From the client perspective, satisfaction refers generally to the match between expectations and real circumstances or treatment. If the match between expectations and service circumstances is equal, the client is generally satisfied or conversely if the service circumstances fall below expectations, the client is dissatisfied. The American Nurses Association(ANA) (1999) defined patient satisfaction as measuring patient/family opinion regarding care received from nursing staff (ANA, 1999). From a rehabilitation perspective, Beattie, Dowda, et al., (2005) defined patient satisfaction as a “construct reflecting the overall experience of an individual receiving examination and treatment in a given environment during a specific time period” (p. 1047). Measurement of satisfaction including satisfaction in rehabilitation settings has been described as any measure that solicits patients’ evaluations and affective responses to specific dimensions of their personal healthcare experience (Hudak & Wright, 2000).

It is difficult to define patient or client satisfaction as a single construct because it is used institutionally as an indicator of quality consisting of several domains rather than linked to one specific item or provider. Several authors (Pascoe, 1983; Ware, Snyder, Wright, & Davis, 1983) describe satisfaction as composed of domains linked to both internal and external factors found in the continuum of healthcare. Examples of internal factors include relationships with providers or client participation in services provided. In contrast, external factors include such logistics as accessible parking and location of the facility. These numerous factors could be considered as comprising the content domains of satisfaction.

Staying at medical-physician level, several early literature reviews (Pascoe, 1983; Hall & Dornan, 1988; Sitzia & Wood, 1997) wrestled with conceptualizing, defining, categorizing, and measuring patient satisfaction as an indicator of quality healthcare and/or as an outcome. In a review of patient satisfaction in a primary healthcare setting, Pascoe (1983) ultimately defined satisfaction as an evaluation of service directly received by the patient. That is, it was the health care recipient's reaction to the context, process, and result of the experience (Pascoe, 1983). Hall and Dornan (1988) wrote that satisfaction is a multidimensional term that included the care itself but could also include other aspects such as access, quality, or cost. Sitzia and Wood (1997) suggested that satisfaction could be composed of determinants (i.e., patient characteristics and expectations) and components of satisfaction (i.e., interpersonal manner, outcomes of care, physical environment). Several authors, (Abramowitz, Cote, & Berry, 1987; Urden, 2002; Yellen et al., 2002) posited that nursing service is the primary determinant of

overall satisfaction with a hospital stay. All of these authors also acknowledged that patient satisfaction is an important quality outcome indicator in hospital settings.

**Satisfaction scale development.** Ware, et al., (1983) discussed the development of the Patient Satisfaction Questionnaire (PSQ), which was a self-report survey instrument designed for use with the general population with respect to medical care. The authors discuss the importance of conceptualizing patient satisfaction; their definition was whether patient satisfaction measured the process of care or the patient. The authors describe dimensions of patient satisfaction to include interpersonal manner, technical quality, accessibility or convenience, finances, efficacy or outcomes, continuity, physical environment, and availability.

Heinemann et al., (1997) developed a 40-item satisfaction questionnaire by asking clients what was important to them. Seven domains were identified: admission process, care, timeliness of service, communication, effectiveness, environment, and discharge. They conducted telephone interviews of 3,942 clients (41% of a discharge cohort between 1992 and 1996) one month after discharge from rehabilitation. The authors used Rating Scale Analysis (Rasch) to transform the ratings from ordinal scales to interval measures based on the items 'easy to be satisfied' with rehabilitation. They found that satisfaction was a one-dimensional construct that varied across patient or client groups.

Several authors (Beattie, Pinto, Nelson, & Nelson, 2002; Goldstein et al., 2000; Monnin & Perneger, 2002) identified the lack of satisfaction measures developed specifically for rehabilitation especially physical therapy. They also cautioned that modifying existing satisfaction measures might result in psychometric limitations such as

compromised content or construct validity or limited reliability. They advocated for developing rehabilitation measures of satisfaction specific to physical therapy.

Goldstein et al., (2000) developed and field-tested a 26-item instrument to measure satisfaction with physical therapy ( $N = 289$ ). In developing the measure, the authors used a multidimensional approach and included the following domains of patient satisfaction: satisfaction with treatment, privacy, convenience, cost, billing, scheduling, wait time, courteousness of staff and the physical therapist, and overall satisfaction. Response categories were anchored with a 5-point scale with ratings ranging from 'strongly disagree' to 'strongly agree'. The measure was used to collect data at 12 diverse locations (e.g., hospital-based outpatient, private practice settings); patients completed the instrument when leaving the treatment setting. The authors conducted psychometric tests including reliability (Cronbach's  $\alpha = .99$ ) and some tests of validity. Content validity was supported based on including items in the scale that had been previously included in instruments used by physical therapists. Concurrent validity was developed by using three of the items as criterion measures with the remaining items used to form a summary score. The summary score was correlated with each of the criterion variables resulting in a high level of agreement between the scores. Preliminary construct validity was established through the use of factor analysis with one factor accounting for 83% of the variance, suggesting that patient satisfaction was a single dimension in this scale. External validity or generalizability was limited secondary to patients being from a single network (sample of convenience) and the fact that predictive validity was not established, showing that the measure correlated with an actual outcome.

Beattie et al. (2002) developed, piloted, and administered a survey instrument ( $N = 1868$ ) of patient satisfaction with outpatient physical therapy. The multidimensional domains of satisfaction for this measure were personal aspects of the therapists and external/system aspects of the therapy experience. Global questions concerning a patient's overall satisfaction were also included. The instrument was given to respondents after the completion of their course of physical therapy. The 20-item instrument (18 specific questions and 2 global questions) contained response categories that were based on a 5-point scale. Reliability was established using the standard error of measurement. The authors examined validity by generating a correlation matrix that determined the interrelationships of the various items and checked the correlation of items with the global measures. A principle component analysis revealed that the number of items could be reduced (when groups of questions represent similar concepts). Factor analysis with rotation produced a 2-component solution (overall alpha of .90), reducing the number of items on the final version of the measure to 10 questions with two global measures (e.g., "Overall, I am completely satisfied with the services I receive from my therapist", and "I would return to this office for future care"). Concurrent validity was established using methods from the previous study (Goldstein et al., 2000) by using the two global measures of satisfaction as criterion variables and comparing them with the other summary scores as an estimate of the degree that the overall scales correlated with the criterion variables. Further analysis revealed that the authors identified 12 items that discriminated between internal and external factors pertaining to satisfaction. The authors found that the quality of the interaction between the patient and therapist was more correlated with patient satisfaction than non-patient care issues such as parking and clinic

location. The psychometric analysis conducted in this study provided the foundation for the next step in the instrument development process.

In subsequent research, Beattie, Turner, et al. (2005) further evaluated the instrument now named the MedRisk Instrument for Measuring Patient Satisfaction with Physical Therapy (MRPS). They further evaluated the reliability and validity using confirmatory factor analysis and other statistical methods with the intent of assessing the 2-factor model that discriminated between the internal and external factors. Patients ( $N = 1449$ ) completed the MRPS upon completing their course of physical therapy.

Cronbach's alpha was 0.87 for the external factor and 0.90 for the internal factor. The Standard Error of Measurement was 0.24 for the external factor and 0.19 for the internal factor, indicating a low degree of measurement error. The authors found that the MRPS had a two factor structure, discriminating between internal (patient-therapist interaction) and external (e.g., admissions, environment) factors that could influence patient reports of satisfaction. With the previous work and the current study, the authors completed data collection on three large samples ( $N = 3317$ ) of English-speaking subjects with various diagnoses and payment characteristics who completed a course of outpatient physical therapy. The data and the scope of the respondent pool helped support generalizability of these findings.

Monnin and Perneger (2002) also developed a scale to measure patient satisfaction with physical therapy(PT) ( $N = 528$ ) designed for use with both outpatient and inpatient populations. The 14-item measure was based on four domains or subscale scores of satisfaction with PT: treatment, admission, logistics, and global assessments. According to the authors, all 4 subscales had satisfactory internal consistency



(Cronbach's alpha) and all scores had acceptable ceiling effects and no floor effects, suggesting that the instrument is suited to the populations for which it was developed.

There were similarities in the three studies (Beattie et al., 2002; Goldstein et al., 2000; and Monnin & Perneger, 2002). All sought to develop measures that examined satisfaction with physical therapy and emphasized the connection with rehabilitation. All measures were conceptualized as multidimensional scales although factor analysis often revealed fewer domains than originally conceptualized. All studies examined domains of satisfaction, reliability and validity of the measures using similar methods and all had response formats that could be quantified using a 5-point rating scale.

In summary, Donabedian (1966) outlined a model for evaluating the quality of healthcare that persists to the present. However, more recent authors include a broader range of outcomes that measure participation and client satisfaction. The field of defining satisfaction has evolved from a broad lens of healthcare quality where patient satisfaction was implicit or expected especially if clients recovered to the current state of ambiguity in defining and conceptualizing patient satisfaction. Early on, satisfaction focused on the physician and patient interaction, then patient satisfaction evolved to a broader range, delving into patient perceptions of satisfaction within healthcare in multiple domains. From there, patient satisfaction has included more players on the continuum, beginning with nursing and its importance in patient perceptions of healthcare to acknowledging the presence of all healthcare providers in the process. Recent measurement designs stem from work in physical therapy. At present, patient satisfaction is viewed as a vital outcome indicator for healthcare. All of which suggests that patient satisfaction incorporates a client-centered perception of care that when coupled with measures of

clinical quality and efficiency as conceptualized by the IOM, may incorporate the universe of outcome measurement. In the present study, measures of satisfaction were aligned with the IOM six domains; the intent was to measure patient satisfaction with each of the six IOM domains.

### **Challenges in Measurement of Patient Satisfaction**

The ambiguity in conceptualizing patient satisfaction has also proven problematic when designing its' measurement. Pascoe (1983) lamented the lack of standardization and the use of ad hoc satisfaction measures eliciting reactions regarding minimal or few dimensions of healthcare or patient satisfaction. At present, there continues to be no gold standard version in assessing patient satisfaction and a lack of standardized model for measuring the concept of satisfaction (Sen et al., 2005). When satisfaction is measured, instrumentation has typically been simple, ad hoc measurements that either quantify a few broad statements about satisfaction or measure a few sub-domains of satisfaction (Abramowitz et al., 1987; Pascoe, 1983; Sen et al., 2005). Despite these concerns, the increased emphasis on measuring satisfaction in the literature may signal a new emphasis of the client as an active consumer rather than a passive recipient of healthcare (Speight, 2005). This emphasis on the client as an active consumer is consistent with the tenets of occupational therapy and rehabilitation.

Specific scale development is discussed later in this chapter, but in general measures of client satisfaction are developed using root statements and response choices ranging from, for example, highly satisfied to very dissatisfied most often using a multi-point numeric system with higher scores equaling higher satisfaction. The instrument is most often administered as a self-report measure. Satisfaction ratings are subjective, distinct from observable events of care that can be observed and factual. Satisfaction is

often a personal evaluation of care that cannot be observed objectively. This section covers other challenges or considerations with the measurement of satisfaction.

The measurement of satisfaction often includes various levels of satisfaction; there may be segments including overall satisfaction with healthcare and/or satisfaction with specific and personal treatment (Speight, 2005). In considering satisfaction measurement, rather than having several items that contribute to one rating of satisfaction, several subscales measuring different domains or dimensions of satisfaction may be included (Speight, 2005).

Sitzia (1999) analyzed 195 patient satisfaction studies in general health care with respect to reported validity and reliability. These studies were from 1994 forward and published in 139 journals. Most of the studies collected data via a self-report questionnaire and 80% of the studies used a new satisfaction measure while only 10% modified an existing instrument. Most measures were context specific to the facility or condition of interest. Although 46% of the studies reported validity and reliability data, 60% of the studies using newly developed instruments failed to report any reliability or validity data. This snapshot in time by Sitzia is worrisome from a psychometric perspective but consistent with the literature on patient satisfaction instruments that reveals measures as being site-specific, limiting generalizing the measure to other settings. It reinforces the need to report validity and reliability and use rigor in testing the psychometric properties of new and existing measures.

Collins and O’Cathain (2003) perspective on satisfaction measurement was informed by examining the analysis of the anchors of ‘satisfied’ and ‘very satisfied’. Many times, these two categories of satisfaction are often collapsed into one category of

satisfied. Such a collapsed category suggests very high rates of satisfaction; such inflated scores are a frequent criticism of satisfaction surveys. The tendency to providing a satisfied rating has been attributed to social desirability bias where respondents are reluctant to report less than desirable ratings regarding their providers and generally rate satisfaction quite high on a Likert-type scale. To accommodate for this limitation, the authors propose that much can be learned from a rating of adequate healthcare experience (satisfied) versus optimal healthcare experience (very satisfied). By examining seriously those that are satisfied, but not highly satisfied, there is more sensitivity to the range of scores and opportunities to improve quality. Additionally, examining 'neutral' responses included on scales with an uneven number of responses provides additional information about those that cannot endorse being satisfied, but do not feel comfortable, because of social desirability, endorsing dissatisfaction.

Pascoe, Attkisson and Roberts (1983) tested three methods of measuring patient satisfaction, seeking to compare how each predicted patient satisfaction with services received. In the indirect method, clients ranked dimensions of health care service on aspects such as accessibility, technical skill, and outcomes using a series of card sorts and positioning of cards on a 100-point scale. The premise was that these rankings, although general, would reflect the experience of the client and thus measure patient satisfaction indirectly. This idea had been argued in other literature and an indirect measure might mitigate problems of social desirability bias. In the direct methods, two different self-report satisfaction questionnaires were used. The authors found that the indirect measure had a lower mean score, greater range and standard deviation than the two direct measures, resulting in extensive missing data, inconsistent responding, and skewed

responses. The indirect method was far less acceptable to clients and scores were unrelated to global ratings of client satisfaction. In contrast, both self-report satisfaction questionnaires were completed more accurately and the results were predictive of the client's ratings of global satisfaction. The authors concluded that measures of general satisfaction with health care at the macro level are valid to assess clients' perspective at that level, but do not measure the clients' perception of satisfaction with their health care.

Olejnik et al. (1998) discussed the validity of satisfaction surveys especially content validity. Validity is defined as the appropriateness, meaningfulness, and usefulness of inferences made from scores; that is the scores not the instrument can be defined as having varying degrees of validity in different contexts. The authors discussed aspects of construct validity and their importance in providing support for any inferences made from the scores generated by measures. Validity testing is ongoing and never proven, thus is a more complex test of psychometrics. While testing reliability is fundamental to psychometric analysis, a measure can be reliable but if the construct is meaningless it does not matter if it is consistently measured or not. Content validity, as an aspect of construct validity, refers to the item representation of the scope of the construct. Achieving construct validity may be challenging because of the number of factors that may contribute to satisfaction as is seen in existing research. There may be a lack of theory to guide instrument development, a lack of consensus on definition, or restrictions on time and resources available to develop these measures. Instrument developers are often faced with deciding which items to include on a measure that adequately captures the construct or dimensions of satisfaction. If the measure is lengthened to try and capture all the dimensions or content of satisfaction, then it may result in more response

burden and non-response rates or respondent fatigue with the same answer provided for each question. These authors recommend that it's better to ask multiple questions on a limited number of dimensions of satisfaction rather than a limited number of questions on multiple dimensions of satisfaction. They argue for more depth on the dimensions rather than breadth of coverage. Such in-depth strategy improves the reliability for the items that are included. The authors also recommend using a response format that's easy to use suggesting a four- or six-point scale providing an opportunity for greater variability in responses for each item. They espouse elimination of the neutral position and forcing the respondent to express an opinion. Of course response formats could be the topic of multiple studies itself.

A multidimensional measure of satisfaction measurement may have similar response categories or formats for response, but have multiple statements/questions covering multiple dimensions of satisfaction as determined by the authors of the measures. Dimensions of care may range from interpersonal relationships/communication between patient and provider to technical quality, or physical environment (Ware, et al., 1983). Defining the focus or emphasis of the measure is an important aspect of measuring patient satisfaction. The measure may emphasize care or the overall quality of the healthcare process or may focus more the treatment outcome or the results of specific interventions. A measure may be generic or disease specific, which will affect its applicability or use in multiple settings. The measure may be direct in terms of asking a patient about their personal experience with healthcare, or may be indirect in asking about a patient's attitudes towards healthcare in general. These ideas, global-multidimensional, care-treatment outcome, generic-disease

specific, and direct- indirect comprise ways that a measure's content can be classified (Hudak & Wright, 2000).

### **Satisfaction Studies in Rehabilitation**

Although there has been much written about satisfaction with healthcare, there has been less published research regarding satisfaction in rehabilitation as documented by numerous authors (Elliott-Burke & Pothast, 1997; Grisson & Dunagan, 2001; Heinemann, Bode, & Cichowski, 1997; Keith, 1988, Mancuso, et al., 2003). Since early 2000 there have been more attempts at reporting satisfaction with rehabilitation, but a common means of comparison among studies is hard to establish. This is because patient satisfaction can be defined in many ways with respect to the rehabilitation literature. Some studies report satisfaction with a medical procedure in rehabilitation (Bourne, Chesworth, Davis, Mahomed, & Charron, 2010) or are descriptive in nature (Stiller, Cains, & Drury, 2009). Others may report on patient satisfaction with symptoms after treatment for a specific condition (George & Hirsh, 2005). Again, the problems of external validity of findings and synthesis of findings seen in healthcare are also found in rehabilitation. In this section, a sample of studies is reviewed to demonstrate the findings in rehabilitation and the methodologies used.

Forsberg, de Pedro-Cuesta, and Holmqvist (2006) used Ware et al.'s (1983) taxonomy of satisfaction in measuring satisfaction with individuals ( $N = 42$ ) with Guillain-Barre Syndrome and found that patients were mostly satisfied with their care. However, they were least satisfied with financial considerations such as the cost of health care and how their insurance was handled. They wanted more information provided to them regarding their treatment and condition.

Chiu, Lam, and Hedley (2005) found moderate to fair relationships inversely correlating satisfaction with pain and active range of motion (AROM) in patients with chronic neck pain. That is, patients with more residual pain and limitation of movement were more dissatisfied with their care. In this study, measures of bodily function were used as correlates of satisfaction.

In a systematic review of 15 studies and a meta-analysis of seven studies conducted in English speaking countries, Hush, Cameron, and Mackey (2011) ( $N = 3790$ ) examined patient satisfaction with musculoskeletal physical therapy care. The authors determined that recipients of musculoskeletal physical therapy were highly satisfied overall with their care. The interpersonal attributes of therapists and the process of care were key determinants in patient satisfaction. Key process variables included duration and frequency of care, continuity of care, appropriate follow-up, and involvement of the client in the decision-making processes. The higher the rating of process measures and the interpersonal attributes of therapists, the higher the rating of satisfaction. Surprisingly, actual treatment outcome was not a consistent determinant of satisfaction with physical therapy care.

In a study of satisfaction (Stiller et al., 2009) among 106 patients at an inpatient physiotherapy (physical therapy) rehabilitation center in Australia, the authors developed a 12-item multidimensional survey to measure satisfaction specific to physical therapy. They found high levels of satisfaction with physiotherapy service along with satisfaction with the overall service, the interpersonal attributes of the therapists, and the facility itself. Demographics such as age, gender, or diagnosis were not predictive of



satisfaction. The authors used the results to improve communication with patients including realistic goal setting and clarifying patient expectations.

In a review of literature from 1999, Harding and Taylor (2010) found few studies that specifically address satisfaction with allied health services such as occupational and physical therapy. To contribute to the field, their study, Harding and Taylor utilized the MedRisk Instrument for Measuring Patient Satisfaction (MRPS; Beattie, Turner, et al., 2005) to examine the level of post-intervention satisfaction of clients ( $N = 165$ ) receiving outpatient occupational therapy and physiotherapy services. The authors of the study found high levels of satisfaction (agree/strongly agree) regarding aspects of their care and experience. Based on open-ended responses, the authors reported that external factors could improve the patient's reported experience including improving the comfort of the waiting area and the communication with the client about wait times or the type of service. Harding and Taylor (2010), as other authors noted, suspected a bias in patient satisfaction surveys including social desirability or wanting to please service providers. They recommended that open-ended questions may be more helpful in identifying ways to improve satisfaction.

In a Canadian rehabilitation setting, McKinnon (2001) sought to determine if satisfaction ratings differed significantly between age groups of adults and if the satisfaction results were congruent with the client-centered practice of occupational therapy. Using telephone interviews of 107 clients and a project-designed survey with closed and open-ended questions, McKinnon found that clients were satisfied with the accessibility, quality, and outcomes attributed to occupational therapy. Clients especially valued how the therapist demonstrated interest and respect for the clients views and met

the individual needs for advice and assistance with every day occupations, consistent with a client-centered practice. The telephone interview method permitted clients to tell their stories and yielded richer information about what to change than simple self-report measures.

In another later study, McKinnon (2001) explored the effects of age on satisfaction with physical therapy services. She compared the responses ( $N = 433$ ) from a telephone survey for three age groups: 18-49 years, 50-64 years, and 65 years or older. Older adults were more satisfied than younger with how the staff asked about and developed their understanding and management of their conditions. Older adults also rated the accessibility of services more highly. Although age was significant in predicting satisfaction, satisfaction was related to aspects of service delivery rather than service outcomes.

In summary of many other studies and these, satisfaction, as an outcome of occupational therapy, is important to clients and supports their autonomy and partnership with the therapist (Chiu & Tickle-Degnen, 2002; Law, et al., 1995). Satisfaction is a widely used measure of rehabilitation outcome (Keith, 1998) that has been used to test the effectiveness of treatment (Reker et al., 2002). As a multi-dimensional concept, the measurement of satisfaction is not simple; rather it requires planning, forethought and rigor (Olejnik et al., 1998). There is a strong relationship between the interpersonal interaction of clients and therapists; clients are more satisfied if they feel treated with respect, have input in goal setting, and receive personalized attention (Elliott-Burke & Pothast, 1997; Keith, 1998). An important correlate of client satisfaction is the provider-patient interaction including perceived degree of warmth, friendliness, and sense of

caring all related to higher satisfaction (Keith, 1998). These correlates are also valued in occupational therapy and may be optimally utilized in the goal identification or collaborative phase early in the therapeutic process. Whiteneck (1994) and Keith (1998) recommend including questions about satisfaction for each service in rehabilitation, in part to differentiate the effects of any single discipline. Satisfaction is also important because high client satisfaction is associated with greater compliance and improved outcomes in rehabilitation (Keith, 1998). Huebner, Johnson, Bennett and Schneck (2003) found that satisfaction with occupational therapy was generally high, but unrelated to most functional outcomes, suggesting that other factors such as interpersonal characteristics may influence satisfaction, independent of functional outcomes. Thus, exploring multiple constructs in model building is necessary to tap the correlates of client satisfaction.

### **Predictive Satisfaction Studies in Rehabilitation**

In this section, studies that included a logistic regression analysis to contribute to understanding the prediction of satisfaction are grouped together. Each of these articles share a similarity in how the data were analyzed. The results are summarized in Table 1 and explored in more detail in the narrative. The discussion is presented in the same order as the studies are included in Table 1.

In patients with multiple orthopedic impairment, Mancuso et al., (2003) found that discharge FIM motor measures were the strongest predictor of satisfaction in the total sample ( $N = 7781$ ); higher scores on the FIM were associated with higher satisfaction. Within the sample, patients with lower extremity fractures ( $N = 2664$ ) were older, had a longer length of stay (LOS), and scored lower on the FIM instrument and were less likely to be satisfied. Patients with lower extremity joint replacements

Table 1.1. Predictive Studies of Client Satisfaction

| Study and sample size                        | Design and clinical setting                              | Determinants of satisfaction tested   | Results  | Conclusions   |
|--|--|---|--|---|
| Mancuso, et al., 2003<br>( <i>N</i> = 7,781) | Retrospective design<br>Inpatient rehabilitation         | Satisfaction level; FIM scores; gender, age, English language, marital status, D/C setting, LOS, Repeat hospitalization, FIM gain, Primary payer  | D/C FIM motor rating, re-hospitalization, age, patient's primary language, and D/C setting associated with increased satisfaction. (94.9% of patients)<br>Higher D/C Motor FIM associated with increased satisfaction with patients having LE fractures and joint replacements.  | Functional and demographic variables were predictors of satisfaction in these patients with orthopedic impairment.    |
| Ingo, et al., 2006<br>( <i>N</i> = 120,825)  | Retrospective study.<br>Inpatient medical rehabilitation | Age, gender, special subject, the hospital, admission procedures, the accommodation, catering, service, general atmosphere, organization and therapy planning, medical care, nursing care, therapy, training and advice, goal achievement, success of therapy (specifically pain reduction, increase in physical fitness and mental well-being, and functional independence in ADLs). | Based on significant determinants of satisfaction, would patients recommend rehabilitation hospital to others; Age, admission procedures, organization and therapy planning, accommodation, the catering, general atmosphere, type of room, medical care, sports therapy, social welfare service, diet and nutrition advice, rehabilitation goals, success of rehabilitation | Overall satisfaction mainly determined by general atmosphere in hospital, successful rehabilitation, and medical care |

Table 1.1 (continued).

| Study and sample size                            | Design and clinical setting                       | Determinants of satisfaction tested   | Results  | Conclusions  |
|--|---|---|--|--|
| Ottensbacher et al., 2001<br>( <i>N</i> = 8,900) | Retrospective<br>Inpatient medical rehabilitation | Age, gender, ethnicity, marital status, total LOS for rehabilitation, D/C setting, primary payer source, D/C motor FIM rating, D/C cognitive FIM rating, D/C total FIM rating | D/C total FIM rating (and FIM subscales in transfers, social cognition, and locomotion significantly associated with increased satisfaction), patient ethnicity, age | Higher FIM instrument D/C score associated with increased satisfaction, older African-American and Hispanic patients reported higher dissatisfaction; non-Hispanic whites no difference in satisfaction related to age |

Table 1.1 (continued).

| Study and sample size                      | Design and clinical setting   | Determinants of satisfaction tested  | Results   | Conclusions  |
|--|---|--|---|--|
| Pound, et al., 1999<br>( <i>N</i> = 274)   | Randomized Control Trial with discharge (DC) to 2 conditions: conventional inpatient and early DC to community with home therapy. Follow-up study at 4 months and 1-year post DC. | Barthel Index, Nottingham Health Profile (NHP), Hospital Anxiety & Depression Scale, Mini-Mental State Exam (MMSE), Motricity Index, Rivermead Activities of Daily Living Scale. Age, gender | No significant differences with patient characteristics between groups at both time points; at 4 mos, high rates of satisfaction with inpatient care, lower satisfaction with amt. of information received, amt. of recovery made, very low satisfaction with amt. of therapy received. Same at 12 mos. More therapy, meals on wheels, and home help predicted increased satisfaction. Patients in conventional treatment were overall less satisfied than patients with early DC and home health care. | Satisfaction is affected by provisions of care; occur independently of associations with patient characteristics |
| Tooth, et al., 2004<br>( <i>N</i> = 5,727) | Retrospective SCI and medical rehabilitation inpatient  | Socio-demographic variables, CMG, LOS, re-hospitalization, follow-up therapy, and health maintenance   | Overall high satisfaction reported; CMG and re-hospitalization, marital status, affected satisfaction   | Satisfaction with medical rehabilitation related to functional abilities, re-hospitalization, and marital status |

Table 1.1 (continued).

| Study and sample size                       | Design and clinical setting                          | Determinants of satisfaction tested   | Results   | Conclusions   |
|---|--|---|---|---|
| Berges, et al., 2006<br>( <i>N</i> = 2,507) | Cross-sectional.<br>Inpatient medical rehabilitation | Overall satisfaction, pain, age, gender, marital status, ethnicity, LOS, functional status(FIM) | High pain score associated with lower satisfaction, | Postoperative pain associated with reduced satisfaction with medical rehabilitation |

( $n = 5117$ ) had four variables that were statistically significant in contributing to satisfaction. They were discharge FIM motor scores ( $p < .001$ ), patient age ( $p < .002$ ), re-hospitalization ( $p < .001$ ), and discharge setting ( $p < .002$ ). Patients discharged home were significantly less likely to be dissatisfied with rehabilitation services than individuals discharged to another setting such as a nursing home (.47) (95% CI, .30-.75). This study did not consider the change in FIM scores from admission to discharge in any models but only considered motor function at discharge. For clients with joint replacements or lower extremity fractures, higher discharge motor FIM ratings were significantly associated with satisfaction suggesting greater mobility at discharge was associated with greater satisfaction overall. The authors also used a single question of overall satisfaction rather than multiple questions regarding dimensions of satisfaction.

In a secondary analysis of data from ongoing patient surveys ( $N = 120,825$ ) in German rehabilitation hospitals, Ingo, Lehnert-Batar, Schupp, Gerling, and Kladny (2006) sought to identify aspects of patient satisfaction that would cause patients to recommend a rehabilitation hospital to others. They used a measure considered to be a widely used measure of patient satisfaction according to the authors. The data originated from seven private rehabilitation hospitals in Germany whose patients had inpatient medical rehabilitation including orthopedic, neurological and internal medicine departments. Patients completed a 36-item satisfaction scale and questionnaire including demographic data. The initial regression analysis determined that a variety of factors, with a P-value below 5%, related to the perceived satisfaction of the patients. Included were perceived satisfaction with admission procedures, the organization and therapy planning, the accommodation, the catering, the general atmosphere, private or semi-



private rooms, medical care, sports therapy, social welfare service, nutrition and diet advice, rehabilitation goals, and success of rehabilitation. Age was the only demographic variable that significantly influenced recommendation of the hospital to others.

Satisfaction with the general atmosphere of the hospital, satisfaction with medical care, and the success of rehabilitation at discharge were the strongest factors contributing to satisfaction. The odds of a patient satisfied with the general atmosphere recommending the hospital were about eight times that of the patient dissatisfied the general atmosphere. Patient's willingness to recommend a hospital as a measure of satisfaction was dependent on three variables including the success of therapy.

Using a large sample of patients ( $n = 8900$ ) with cerebrovascular impairment or stroke, Ottenbacher et al., (2001) explored variables associated with patient satisfaction. Follow-up interviews were conducted 80-180 days post discharge and the patient was specifically asked if they were satisfied overall with his/her medical rehabilitation using a 5-point rating scale (1=very dissatisfied to 5=very satisfied). Variables associated with satisfaction were total FIM rating, patient ethnicity, and age. Patients who had a higher FIM total rating were more satisfied than patients who had a lower functional status at discharge. Older African-American and Hispanic patients reported more dissatisfaction.

Pound, Tilling, Rudd, and Wolfe (1999) studied patients ( $N = 274$ ) who had a stroke and who could either transfer independently (if living alone) or could transfer with assistance (if living with a caregiver). Once categorized, the patients were randomized into two groups, either continuing to receive conventional inpatient treatment or discharged early to the community where the patients received a planned course of physical, occupational, and speech therapy in the home. In addition, other community

resources (meals-on-wheels) were provided. Dimensions of patient satisfaction were measured via interview at 4 and 12 months post-randomization using a 4-point Likert-type questionnaire (agree, strongly agree, disagree, or strongly disagree). Each of the 12 statements were grouped into domains of inpatient care, therapy, recovery, and services after discharge. Sample sizes for the satisfaction questionnaire ( $N = 201$  at 4 months and  $N = 194$  at 12 months) limit the study's power to detect differences between the two conditions. On questionnaire items related to inpatient care, satisfaction was most related to care received with conventional care group and less likely than patients in the early discharge group to be satisfied with most aspects of inpatient care at 12 months. Depressed patients were less likely and anxious patients more likely to express satisfaction with inpatient care at 4 months. In terms of therapy and recovery, satisfaction with therapy was related to the amount of therapy received with patients receiving more than 14 units were more likely to be satisfied at 4 months than those receiving less than 14 units. At 1 year, patients in the conventional therapy group were less likely to be satisfied with the amount of recovery made than those in the early discharge group. Patients who participated and received community resources (meals-on-wheels, home care visits) were more likely to be satisfied at both 4 and 12 months relating to services after discharge.

Tooth et al. (2004) had not found studies evaluating satisfaction with inpatient rehabilitation for patients with spinal cord injury (SCI) and wanted to identify predictor variables that contributed to overall satisfaction with rehabilitation post-discharge. Socio-demographic data were collected and clinical characteristics were collected by using Case Mix Groupings (CMGs). Case Mix Groupings were developed by the Centers

for Medicare and Medicaid Services to provide a structure for reimbursement for inpatient medical rehabilitation. Case Mix Groupings were used in this study as a measure or proxy for severity of injury or functional impairment such as type of SCI (traumatic or non-traumatic), functional status (FIM scores), LOS, age, and patient death. Information regarding incidence of re-hospitalization, need for follow-up therapy, and health maintenance (who provided care for the patient) was also collected. The patients were asked an overall satisfaction question regarding rehabilitation services received. The response categories for this were on a 4-point scale (1= “very dissatisfied”, 4= “very satisfied”) and these data were dichotomized into two response categories, satisfied and dissatisfied. Overall, 94% of the patients were satisfied. The data were split by who reported the data (patient self-report or family/caregiver) because of a statistically significant association found with satisfaction based on who had provided the data. Both groups report of dissatisfaction was affected by CMGs and incidence of re-hospitalization. For the patient self-report ( $N = 3858$ ) group, the CMG that was associated with the shortest LOS and least impairment level was 4 times more likely to be dissatisfied compared to most other CMG groups. A surprising result that functional limitations or shorter LOS was not linked to dissatisfaction. This particular CMG was removed from the logistic regression model to determine other indicators of satisfaction, the only significant influence on satisfaction was incidence of re-hospitalization. Those with any level of impairment were less satisfied if they required re-hospitalization. When the report of satisfaction was provided by the family or caregiver (proxy group), satisfaction was significantly lower compared to the patient self-report group. This proxy group also had a greater likelihood of being dissatisfied if the client had been re-

hospitalized. Married patients showed a 50% lower likelihood of being dissatisfied compared to patients who were separated or divorced. Also, in this proxy group, once the CMG with lowest LOS and highest functional level was removed from the logistic regression model, families of patients in CMGs with better functional status were more likely to be satisfied compared with those with lower functional status. Demographic variables such as age or ethnicity were not related to satisfaction in this study.

Berges, Ottenbacher, Smith, Smith, and Ostir (2006) were interested in examining the relationship between pain and satisfaction with medical rehabilitation in patients who had hip or knee replacement surgery. Patients were surveyed by telephone in a follow-up assessment 80-180 days post-discharge. Patients were asked to rate their overall satisfaction with the rehabilitation program on a 4-point scale (1= very dissatisfied, 4= very satisfied) and the responses were dichotomized into satisfied and dissatisfied. Patients were also asked about their current level of pain (0=no pain, 10= worst possible pain). For patients who had hip replacement, each one-point increase in pain was associated with a 10% (OR 0.90, 95% CI 0.84, 0.94) decreased odds of being satisfied with medical rehabilitation. For patients who had knee replacement, each one-point increase in pain was associated with a 9% (OP 0.91, 95% CI 0.87, 0.96) decreased odds of being satisfied with medical rehabilitation. The results obviously showed an inverse association between pain score and patient satisfaction with medical rehabilitation for both patient groups.

### **Correlates of Patient Satisfaction**

In a meta-analysis using socio-demographic characteristics as predictors of satisfaction with medical care, Hall & Dornan (1990) included studies if they quantitatively measured satisfaction with medical care; satisfaction was not defined.

They found that age was the strongest correlate of satisfaction. Clients with greater satisfaction tended to be older with less education. Ethnicity, gender, income or family size had no significant relationship with overall satisfaction with medical care. In this case, age could be a cohort effect, meaning that older people that grew up in the same conditions and era tend to be more easily satisfied.

Cohen (1996) used the SF-36 and measures of patient satisfaction with hospital based services ( $N = 6212$ ) and found that increased pain and poorer psychosocial health were associated with greater dissatisfaction with health care. Similarly, dissatisfaction decreased with age. These authors implied that older individuals may have remembered their healthcare before the National Health Service was enacted in Great Britain.

Jackson, Chamberlain, and Kroenke (2001) measured satisfaction ( $N=500$ ) at different points in time and concluded that over time satisfaction outcome measured in different domains varied. A measure of satisfaction immediately after a healthcare encounter was strongly related to provider (physician)-patient interpersonal communication quality. When asked about satisfaction at two weeks and three months post-encounter, the correlates of satisfaction were different. At later points in time, satisfaction may have been more closely related to symptom improvement and/or improvement in function. If a respondent had no residual unmet expectations, had an explanation of symptom cause and duration, had better functional status, and was older than 65, then they had an increased likelihood of being fully satisfied. Based on this research, the authors developed a model of satisfaction at two points in time.

Dimensions of satisfaction in studies examining specific conditions demonstrated mixed results. In a French study, Thi, Briancon, Empereur, and Guillemin (2002)

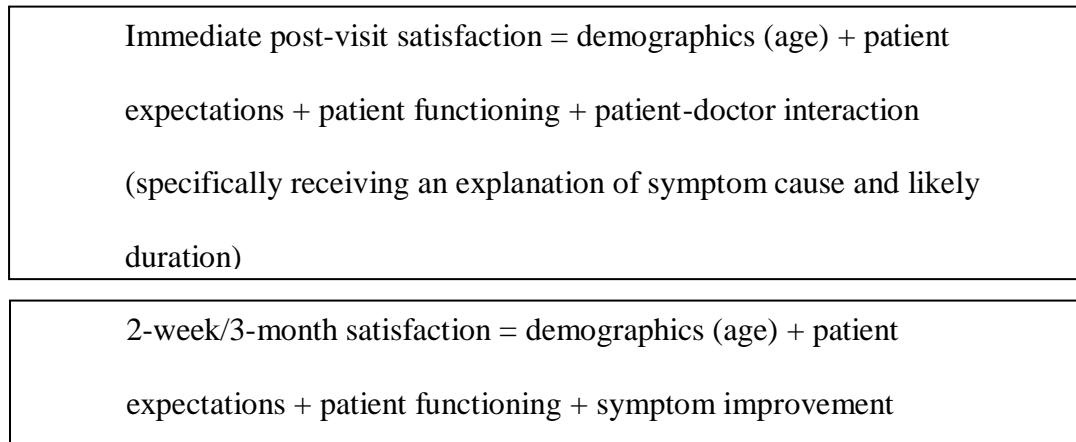


Figure 2.1. Dimensions of satisfaction based on previous research.

examined correlates that influenced levels of satisfaction among inpatients ( $N = 533$ ) who had been receiving care for various conditions (e.g., myocardial infarction, COPD, renal disease) for at least 3 days. On the first day of the patient's hospitalization, socio-demographic data (e.g., age, education level, living situation, gender, and distance from home) and health status were collected in the informed consent process. Two weeks after discharge from a medical facility, clients were mailed a multidimensional (e.g., admission, nursing, medical care, information, hospital environment, overall quality, recommendations) questionnaire asking respondents about their providing information regarding questions recent inpatient experience. The authors found that age was the greatest predictor of satisfaction among the socio-demographic variables collected; self-perceived health status (per the SF-36) at admission was also a strong predictor of satisfaction. Self-perceived health status is not usually considered important in satisfaction studies, according to the authors, but could be used for either comparing different patient groups or groups over time. They also suggested, although they did not do it, that future researchers include change in perceived health status from admission to discharge as a measure of patient assessment of quality of care. In their research, if a

patient recalled that they were critical at admission, they were most satisfied. If a patient had lower general health perception scores on the SF-36, then they were less satisfied. Men were more satisfied than women. Being married, Karnofsky Index more than 70 (ability to care for self or better), critical/serious self-reported condition at admission, emergency admission, choice of hospital by her/himself, stay in a medical service, stay in a private room, length of stay less than one week, and stay in a service with a mean length of stay longer than one week were all predictors for certain dimensions of satisfaction.

Beattie et al., (2002) considered patient satisfaction as an outcome variable in a 10-item questionnaire. Patient satisfaction was more correlated with a quality patient-therapist interaction rather than environmental factors (e.g., location, parking). In a study ( $N = 1502$ ), Beattie, Dowda, et al., (2005) found that clients were more satisfied overall when they had the same provider over time rather than multiple providers.

In summary, correlates commonly found include age, reduced pain, interaction between the therapist and client including consistency of care providers, and the quality of information exchange. Perceived health status at admission was also found to correlate with satisfaction.

### **Improving Client Satisfaction**

When satisfaction is low, rehabilitation providers can change the features or delivery of rehabilitation care, reduce the expectations of the clients, or seek to influence the perceptions of clients. Although it seems obvious that the most important change should be in the actual experiences on which the client reported, it is important in research to understand that some clients may have reduced expectations and that marketing might influence perceptions independent of actual experiences.

Grissom and Dunagan, (2001) studied clients who had hip and knee arthroplasty ( $N = 46$ ) to identify opportunities to increase patient satisfaction and decrease length of stay. They measured satisfaction within four domains: provider system, services, staff, and the decision process. They found opportunities to improve satisfaction by decreasing the time to initiate therapy from acute-care to the rehabilitation unit, reducing inconsistent care and information from rehabilitation hospital providers, and communication from staff to patient regarding the differences in the expectations of clients in the rehab process between acute-care and rehabilitation environment. Based on the survey results, they initiated a streamlined common documentation system to increase consistency of care, improved staff consistency for each patient, and enhanced patient orientation during the transition from acute-care to the rehabilitation setting. With these changes, they found that satisfaction improved and length of stay was shortened during inpatient rehabilitation. Satisfaction levels increased from a baseline of 77% before changes to 92% after these changes despite a decrease in length of stay of 1.8 days. Surprisingly, FIM scores in this study decreased during this time indicating an actual decrease in function that was statistically significant in an inpatient rehabilitation setting. This finding suggested that changes in function as measured on the FIM are not always related to increases or decreases in client satisfaction.

## **Methodology Literature Review**

### **Instrument and Scale Development**

As indicated earlier, client satisfaction scales are generally designed as self-report measures. They may focus on multiple aspects such as global-multidimensional, care-treatment outcome, generic-disease specific, and direct-indirect comprise ways that a



measure's content can be classified (Hudak, 2000). There is a wide range of instruments and methods of measurement for satisfaction that were described earlier in Section 2.

There are multiple authors and resources (e.g., Andresen, 2000; Choi & Pak, 2005; Corcoran & Fisher, 2000; DeVellis, 2003; Dillman, 2000; Dobrzykowski, 1997; Hudak & Wright, 2000; Netemeyer, Bearden, & Sharma, 2003; Sitzia, 1999; Urden, 2002; Ware et al., 1983) that discuss or describe best practices in instrument development and scaling. Because this research focuses on a two- part study with a pilot development of a measure of satisfaction and tests the revisions to that measure, information on the standards of instrument and scale development are included here. The work of these authors has been a guide in determining how to approach issues of measurement. Designing and implementing measures of customer satisfaction is a rigorous process requiring attention to multiple details and multiple iterations of a tool with feedback from experts and consumers.

A first step in scale or measurement development is determining content and deciding on the type of self-report measure. Content validity refers to developing an item pool (DeVellis, 2003) that thoroughly covers the content of interest. Hudak and Wright (2000) discussed characteristics of satisfaction measures as falling onto two major axes of content and method. Content is the focus of the measure and method is how it's administered or presented. The measure can be global, with one or two questions about overall or general satisfaction, or multidimensional, containing multiple items probing different aspects of satisfaction. In each case, the item pool would vary to cover the content. A single item rating on a global scale of satisfaction might be anchored in response categories such as a visual analog scale (anchored by phrases such as

“completely dissatisfied” to “very satisfied”) or using a multi-point scale such as rating ‘1’-“strongly agree” to ‘5’- “strongly disagree”. These choices help classify or consider the characteristics of a desired satisfaction measures. A multidimensional measure of satisfaction measurement may have similar response categories or formats for response, but have multiple statements/questions covering multiple dimensions of satisfaction. Dimensions of care may range from interpersonal relationships/communication between patient and provider to technical quality, or physical environment (Ware et al., 1983). The measure may emphasize aspects of care or treatment, the overall quality of the healthcare process, or may focus on the treatment outcomes or results of specific intervention. A measure may be generic or disease specific; such decisions will affect its applicability or use in multiple settings. The measure may be direct in terms of asking a patient about their personal experience with healthcare, or may be indirect in asking about a patient’s attitudes towards healthcare in general. These ideas, global-multidimensional, care-treatment outcome, generic-disease specific, and direct-indirect comprise ways that a measure’s content can be classified (Hudak & Wright, 2000). Dobrzykowski (1997) suggested using a systematic approach when deciding to measure outcomes including first defining the intended audience (who will use the results) and the population of interest. Next, consider the practice setting and prevalent diagnoses where measurement will occur to select the best available measurement instrument or from a broader perspective, will allow comparisons of outcomes from similar environments or diagnostic categories. They recommended determining if a data collection protocol exists in the environment where measurement will occur and who will coordinate the process

(Dobrzykowski, 1997). These procedures can guide the initial process of measuring outcomes.

The works of DeVellis (2003), Netemeyer et al., (2003) and Urden (2002) are classical guides to developing item content and format, scaling, and psychometric analysis for self-report scales. Early decisions include choosing a methodology or design for the scale or assessment, whether the data collection methods will be quantitative or qualitative or mixture of both (Urden, 2002). Decisions about the format for measurement are included in this step, selecting from many types of formats to be considered (e.g., types of scaling, response formats). Once a scale type is decided upon, items for the scale can be developed in multiple ways such as gathering expert opinion including client input, reviews of the literature, or using a theory or conceptual model to frame items. Often multiple iterations are needed to ensure that the content is fully representative of the construct of interest. At the simplest level, a measure is said to be valid if it measures what it purports to measure (Andresen, 2000). Content validity is when the items on the measurement instrument clearly represent the concept being studied (Sitzia, 1999). Face validity refers to the perceptions of those that take the measure that it logically measures what it is supposed to measure.

Internal consistency or reliability of a scale is often assessed using Cronbach's coefficient, alpha, as a numerical representation of the extent that the items of a scale measure the same construct (DePoy & Gitlin, 2010). DeVellis (2003) suggested that different levels of alpha for a scale could be interpreted as follows: below .60, unacceptable; between .60 and .65, undesirable; between .65 and .70, minimally acceptable; between .70 and .80, respectable; between .80 and .90, very good. Internal

consistency can be affected by poorly written items that are confusing to respondents, a limited item pool, a constricted range for ratings, or the inclusion of multiple domains that are tested as if they were one dimensional. Reliability can also be supported by examining non-response rates or the amount of measurement error found in analysis of the scores. There are a number of sampling issues such as an aspect of the design of the questionnaire (e.g., having a second page) that might lead respondents to fail to complete specific items or confusion over the language of items or how to rate the item that all affect reliability. Reliability refers in general to stability of the scores that should be consistent between participants, between raters, or over multiple administrations.

Test-retest reliability is often used to assess how constant scores remain from one occasion of measurement to another. The rationale being that if a measure reflects a meaningful construct (latent variable), then it should assess that construct similarly on separate occasions (DeVellis, 2003) or when rated by two different observers of the same event (inter-rater reliability).

Supporting construct validity, as mentioned early, is an ongoing process that provides evidence that the instrument actually measures the construct of interest. There are multiple subcategories of construct validity, each supporting the measure as useful for making inferences. For example, criterion-related validity is established when scores on a “new” scale are correlated with some other measure that has already been accepted in the field of study as a ‘gold standard’ for measuring the concept (DeVellis, 2003;Sitzia, 1999). Generally, the “new” scale and the ‘gold standard’ are administered at the same time to support concurrent validity of the new measure (Sitzia, 1999). Other concurrent measures may include ratings by professionals or measures thought to vary in

the same way as the construct of interest. If no 'gold standard' or criterion exists, then construct validity must be established often by referring to a theory or theoretical relationship of scores on the scale to other variables. That is the scale may have predictive validity that demonstrates the scores ability to predict (e.g., a score on the same scale) other variables or discriminate validity, showing that scores differentiate between groups (e.g., young/old or acute/chronic) consistent with theory or expectations. There are multiple methods to support construct validity. The methodology of the measure should reflect the nature of the latent variable or construct and the uses of the scale (DeVellis, 2003).

The underlying construct that a scale reflects is often called a latent variable. If a scale is valid, it captures the true meaning of the latent variable. When analyzed using factor analysis, if the scale is reliable, most of the proportion of variance will be attributable to the latent variable of the scale. It is expected that the items on the scale will be related or correlated with each other; also these items would have a strong relationship to the latent variable or have internal consistency, meaning there is a certain level of homogeneity of the items within the scale (DeVellis, 2003). Factor analysis is often used to identify (explore) or confirm the latent variables included in the scale.

In addition to considerations of reliability and validity, standards to ensure clinical utility for outcomes measures (Andresen, 2000) or rapid assessment instruments (Corcoran & Fisher, 2000) can be applied. Measures should be responsive to change; that is, they should capture small and large gains in function or performance at a level that is meaningful to the population. For example, satisfaction may change more quickly in acute settings than in long term rehabilitation settings; the long term setting may need

to measure smaller increments in satisfaction than the acute setting in order to capture change. Measures should be easy to administer, score, and interpret; useful to practitioners or clients and brief (< 15 min.) with adequate face validity to engage clients in completion (Andresen, 2000). Such characteristics reduce respondent and administrative burden. Measures should be grounded in theory, free of bias, client-centered, and reliable with demonstrated construct validity (Andresen 2000; Olinick et al., 1998). Corcoran and Fisher (2000) describe rapid assessment instruments that “have a great deal of potential for adding immensely useful information to practice” (p. 36). Rapid assessment instruments are: written in clear simple language, require minimal competence in testing procedures, can be scored easily by practitioners, and are sensitive to change.

Self-report measures, just as surveys according to Dillman (2000), can be developed to ensure a high rate of participation and complete and good quality data. Dillman (2000) recommends an approach that creates respondent trust and reduces respondent burden through the wording of the questions and avoiding subordinating language or statements or confusing terminology that can make respondents feel stupid or insulted. Longer measures may be fatiguing and result in non-responses and reading level should be kept low.

Another consideration of the methodology is determining how the survey will be administered: self-report, telephone, or via mail and a combination may be used to obtain an optimal response rate (Urden, 2002; Dillman, 2000). The timing of the measurement is also important. Ideally, in satisfaction research the survey or measure would be offered to respondents soon after the encounter to obtain the best results (Urden, 2002), but

satisfaction perceptions might change over time or with repeated contacts with rehabilitation.

Collins and O’Cathain (2003) reported that inflated scores are a frequent criticism of satisfaction surveys. The tendency to providing a satisfied rating has been attributed to social desirability bias where respondents are reluctant to report less than desirable ratings regarding their providers and generally rate satisfaction quite high. DeVellis (2003) described social desirability as a condition a respondent is motivated to present himself/herself in a positive way, thus distorting item responses. Choi and Pak (2005) provide a comprehensive overview of the biases or flaws in self-report questionnaires. A few of these include using double-barreled questions that ask for two different ideas in one question or complex questions that mask the intent of the item. Response categories must have a range of options that fit the client’s perception; forced choice options may cause distress for respondents. Floor/ceiling effects are found when an instrument does not detect incremental change at either end of the spectrum or responses tend to fall onto one end of the scale. Halo bias refers to the tendency to rate all items either very positively or negatively and recency effects introduces a bias when an event happening just before completing the measure influences the results in one direction.

### **Model Building and Data Analysis Concepts**

Two types of advanced statistical analysis will be included in this study, factor analysis and logistic regression analysis. Factor analysis is a statistical technique that can be used to identify or confirm the latent variable structure of a measurement. Factor analysis was used in the pilot study and will be used in the dissertation research.

Factor analysis and principal components analysis (PCA) are terms often used interchangeably that describe a process to reduce, identify, and/or extract variables that

make up a scale (Mertler & Vannatta, 2009). According to DeVellis (2003), when the underlying structure of the scale is unknown, PCA or factor analysis can be used to explore and elucidate this structure. PCA is also used when the emphasis of an analysis is exploratory and the underlying structure(s) contained in a scale is not known (Mertler & Vannatta, 2009).

When using PCA to analyze a measure, the analysis must be guided by statistical principles and experience that is gained through real-world applications to know exactly when to abide exactly by a textbook and when data must be evaluated and choices made based on what is available (type of research, setting, types of potential respondents, and available data). Factor analysis requires careful planning. Researchers must choose the number of factors to identify and ensure that the results conceptually represent the data. To make choices in the factors to be retained, Mertler and Vannatta (2009) made three recommendations for researchers.

- Researchers should retain the factors (components) that account for at least 70% of the total variability.
- Researchers should retain only those components whose eigenvalues are greater than one. Eigenvalues are the total amount of variance explained by each component that is presented or extracted. This is also referred to as “Kaiser’s rule”; particularly applicable when the number of original variables is  $< 30$  and the communalities are  $> .70$ , or when  $N > 250$  and the mean communality is  $\geq .60$ . Communalities are the proportion of variability for a given variable that is explained by the components or factors. The variability



can be from error, can be unique to that variable, or can be shared from other variables.

- Researchers should examine the scree plot or graphical representation that shows the magnitude of each eigenvalue (vertical axis) with the ordinal numbers (horizontal axis). By examining the graph, the eigenvalues with greater magnitude will be evident or high on the vertical axis with the remaining eigenvalues leveling off. The higher values on the graph before “leveling off”, also called the point of scree, represent the number of components to retain.

Once a pattern of latent variables is identified as accurately representing the data, the latent variables are named by the researcher based on the items that load most heavily on each factor. Rotation of the factor structure helps to create orthogonal variables that can then be named. These latent variables are then considered domains or subscales of the overall measure and can be tested for reliability and validity and used in model building.

The path model is presented in a graphical format that can create a mental or visual picture identifying key components of a program or aspects of satisfaction in this case (Munro, 2001). A path analysis or display is a way of depicting the theorized directional relationships between a set of variables (Munro, 2001). Variables are conceptualized as independent and dependent variables and can be either directly measured variables or latent variables. Only one article (Hills & Kitchen, 2007) was found that used model building and the generation of a theoretical path analysis to explain the relationships between satisfaction and multiple cognitive and affective independent variables. Similar to the plan proposed for this study, they used regression

analysis to test the strength of relationships in a theoretical model and then modified that model based on their findings to develop a new theoretical model expressed as a path analysis without testing it using structural equation modeling.

There are theoretical and statistical assumptions made with path analysis (Munro, 2001). From a strict theoretical standpoint, causation is examined with experimental design by manipulating the independent variable, then measuring the subsequent effects of that. Since many times, data are produced from non-experimental designs, the notion of causation is implicit, thus resulting in carefully worded terminology, such as the independent variables may be called predictor variables that influence rather than cause the dependent variable. Statistical assumptions with path analysis begin with assuming the data are normally distributed, assuming homoscedasticity, and assuming linear relationships. Four other statistical assumptions must also be met. First, when two independent variables are correlated with one another and no other variable influences them, they can't be analyzed and the magnitude of their relationship is represented by the correlation coefficient. Second, it is assumed that the flow of causation in the model is unidirectional or recursive. Next, the variables in the model are supposed to be measured on an interval scale; however, one author argues that this assumption can be relaxed with ordinal variable, especially as the number of response categories in the ordinal variable increases. It is also assumed that all variables in the model are measured without error, that is, measurement error is assumed zero. An independent variable in a model may be diagrammed as having one of three kinds of effects on the dependent variable, depending on its relationships with other variables in the model, direct, indirect, or both. Dependent variables are always endogenous or influenced by other variables in the model and

variables diagrammed as independent of any influence are exogenous. This study begins with a working model that depicts the relationships between demographics and predictors of satisfaction and will conclude with a new model based on the results of the study.

Multiple regression analysis is used to determine the best fitting model to describe the relationships between a dependent variable and a set of independent or predictor variables. This study will use logistic regression to determine which variables will be better predictors of the dependent variable. Logistic regression permits the prediction or testing of the relationship of variables to a dichotomous outcome, in this case satisfaction versus dissatisfaction that will be set with specific cutoff points. Logistic regression can be used with continuous, categorical, or dichotomous or any mix of data types as the independent variables. In logistic regression, the predictors do not have to be normally distributed or have equal variance within groups. Logistic regression can be used to generate a probability of the outcome for each case. The log odds ratio generated by logistic regression is the probability of being in one group divided by the probability of being in the other group and is interpreted as the change in probability given a change in one unit of measurement. Multiple variables can be entered into a logistic regression to test the strength of the relationship between a set of independent variables and a dichotomous dependent variable. When determining which variables will affect the probability of a particular outcome, this probability or odds ratio will help to better interpret the data.

### **Functional Independence Measure**

The Functional Independence Measure (FIM) will be used in this study as a measure of function and a potential correlate of satisfaction. The FIM is part of the Uniform Data System for Medical Rehabilitation and is used in hundreds of rehabilitation

hospitals (Ottenbacher, Hsu, Granger, & Fiedler, 1996; Shah, Heinemann & Manheim, 2007). It is composed of 18 items designed to assess the amount of assistance required for persons with disability to perform activities of daily living safely and effectively and scores range from 18 to 126 with higher scores indicating high functioning. Scoring levels are defined; a score of '7' means complete independence and a score of '1' means total dependence. There are two primary domains associated with the FIM, Motor, and Cognitive. The Motor domain includes thirteen items including self-care, sphincter control, transfers, and locomotion. The Cognitive domain consists of five items measuring communication and social cognition subscales. Based on a review of eleven articles reporting FIM reliability, Ottenbacher et al., (1996) concluded that the FIM provided reliable information regarding clients across different populations, multiple settings when used by trained clinicians.

Three types of reliability were tested: inter-rater, test-retest, and equivalence reliability. Equivalence reliability is the stability of the measure and results when assessed by two or more methods of delivery (e.g., in-person interview, observation, or collected by telephone interview). Eighty-one percent of the reliability coefficients were from inter-rater reliability comparisons most often using the intra-class correlation coefficient (ICC) as the statistical procedure ( $n = 116$ ), then the Kappa statistic ( $n = 53$ ) and the Pearson product moment correlation coefficient ( $n = 52$ ). The results indicated that reliability was highest for upper body dressing and toilet transfers (motor domain) and lowest for comprehension and social interaction. Lower reliability in these domains of communication and social cognition may result from the difficulty in observing these areas or more subjectivity when observing skills that are more complex.

Validity of the FIM is supported in numerous studies including many of those just cited. For example, Tooth et al. (2003) examined the association between FIM motor and cognitive functional gains and patient satisfaction in clients who had been discharged from rehabilitation for 80-180 days. Satisfaction was measured on a 4-point scale (1="very dissatisfied", 4= "very satisfied") but dichotomized to reflect either satisfaction or dissatisfaction. The follow-up data collection was conducted by the National Follow-Up Service (NFS) using telephone interviews. Complete admission, discharge, and follow-up data were available for 9,707 patients. Cognitive and motor FIM gains were associated with significantly increased satisfaction for patients in the self-report group; such a relationship between functional gains and satisfaction is consistent with theory and add support to the FIM as a valid measure. Proxies (e.g., family members or caregivers) ( $N = 7886$ ) on the other hand, reported higher rates of dissatisfaction compared to patient self-report and may reflect caregiver burden or the fact that the patient who could not respond likely functioned at a lower level.

Stineman et al., (1996) analyzed the FIM ( $N = 84,537$ ) across 20 impairment categories in three domains: neurological, musculoskeletal, and miscellaneous. The impairment categories with the highest frequencies were stroke, lower extremity fracture, and joint replacement. The authors found that scores on the FIM instrument distinguished between the three heterogeneous patient groups based on degree of impairment (e.g., patients from some neurological and multiple trauma categories presented with most severe deficits; in contrast patients admitted with issues of pain had the fewest deficit items). The FIM also differentiated groups based on the item-level response (e.g., each value on the 7-point scale was used for each item. The two-

dimensional factor structure (Motor and Cognitive domains) was tested via principal components analysis and found that the motor and cognitive dimensions were consistent in 16 of the 20 impairment categories. They tested the psychometric properties of the FIM and found that as a standardized measure of functional status, the summated total FIM and the motor and cognitive subscales had excellent internal consistency (Cronbach's alpha ranged from .88 to .97 for the total FIM; .86-.97 for motor domain, and .86-.95 for cognitive domain). They evaluated the summative properties of the motor and cognitive portions of the FIM and studied the statistical properties of the admission FIM and found that summated FIM scores compare favorably with other standardized measures used in medical settings.

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## CHAPTER THREE:

### METHODOLOGY

In chapter two, the literature supporting this study and rationale were presented. The purpose of this research builds on a pilot study involving the development and use of a client satisfaction survey with a large regional rehabilitation hospital (RRH). The research is a non-experimental design using an existing dataset that tests a working model of client satisfaction. The results will be used to refine that model.

This chapter will be divided into two sections. First, an overview of the design will be presented followed by the description of a pilot study for the development of a Client-Satisfaction Survey (CSS). Next, the methodology for the dissertation study on model building will be presented. Chapter three also includes a detailed description of the methods used to complete both the pilot and the model building study.

#### **Overall Research Design**

This research design is a clinically based, descriptive outcomes-research design to build a model of client satisfaction with rehabilitation. This research has two components: the development of a client satisfaction measure and the application of that measure with multiple other variables to a large group of individuals completing rehabilitation. The study is a non-experimental design conducted using existing data from a regional rehabilitation hospital (RRH) that included a measure of customer satisfaction, FIM data, and associated demographic and medical information including rehabilitation data for occupational, physical, and speech therapy. All participants in this study were in the healthcare system and received usual medical care and rehabilitation throughout the study. There were no changes to any rehabilitation therapy. Data will be analyzed using

a phased approach with descriptive statistics, comparative statistics, and testing of relationships. From this, a theoretical model of customer satisfaction will be designed.

### **Pilot Client Satisfaction Survey**

#### **Background and Design**

Staff of a large RRH developed and administered a customer satisfaction survey to participants ( $N = 1800$ ) prior to the author's involvement. Near the same time when survey data were collected in fall 2006, the author began volunteering with the Office of Quality Management for an unpaid research apprenticeship. The author continued that involvement with the RRH for several years because of the excellent learning opportunity and the potential for a research partnership. As part of the research internship, the RRH staff asked that the author examine and analyze data generated from the satisfaction outcome instrument used to collect data for a single quarter (3<sup>rd</sup> quarter) in 2006. Specifically, they wanted to know if the survey captured the concepts of the six aims of the IOM and if the survey was reliable and useful.

The RRH staff began the development and use of this new satisfaction instrument in response to proposed *pay-for performance* healthcare changes that were to be enacted by Medicare beginning in 2008. The proposed Medicare changes originated from congressional mandates (e.g., Medicare Prescription Drug, Improvement, and Modernization Improvement Act of 2003) and reports generated by the Institute of Medicine (IOM). The IOM had identified six fundamental aims associated with healthcare quality: safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity (IOM, 2001) and had identified gaps in measuring the quality of health care services (IOM, 2005). The RRH administration wanted to be proactive, as the IOM had suggested, and be a progressive organization that applied these six aims as an impetus



toward quality improvement. The IOM also emphasized coordination and collaboration across care settings to stimulate consumer awareness of quality health care practices. The IOM recommended realignment to a client-centered focus on quality with the idea that such a focus will have increasing importance as Medicare seeks to change provider behavior by aligning payment incentives reward to providers demonstrating best practices as recognized by Medicare and the IOM.

Before the survey design, each department had sent different satisfaction surveys to the clients they served, potentially resulting in multiple surveys to a single client. By sending one survey that would be returned to a central, non-clinical office, the multi-disciplinary committee at RRH hoped that clients could answer honestly, without violating the interpersonal relationships developed during the rehabilitation process. A second outcome of the common design and administration of a satisfaction survey was to initiate culture change at the facility from a “silos-of- care” to a continuum-of-care mentality, fostering inter-departmental communication as clients moved within the environments of care throughout the rehabilitation facility.

Based on these needs, the RRH developed a customer satisfaction survey using a multi-disciplinary committee that included representatives from all departments at the RRH. The committee was charged with using the IOM fundamental aims to develop a client-centered measure of perception of satisfaction. The resulting tool was named the *Satisfaction with Continuum of Care* (SCC) survey. Each department brought survey questions that were relevant to their particular department from clinical areas to registration and environmental services. Admitting/registration wanted to examine the efficiency of the admission process, environmental services was interested in the

cleanliness of the facilities, and clinical areas had a vested interest in pain management, patient education, and discharge instructions. Employees of each department demonstrated an interest in their particular area resulting in a survey instrument with 41 items covering a broad range of concepts.

It was planned that a quarterly dissemination of results from the SCC data would occur at the RRH to guide continuous quality improvement. By utilizing a client-centered instrument across the care-continuum, it was planned that the facility would gain valuable insight regarding client perception as they transitioned from one department to another. Clients could provide information regarding both areas for improvement and positive experiences that could be disseminated and utilized for improvement in each department. The survey was designed to be mailed to clients in one mass mailing at the end of the quarter for anyone who was served during the previous quarter.

### **Pilot Population**

Participants in the pilot study were individuals who received care at the RRH (the primary inclusion criteria) for the third quarter of 2006. Departments at the RRH included inpatient, skilled nursing, home care, outpatient pediatrics and adults. The parents/guardians of pediatric clients completed the survey for their children. There were no exclusion criteria at this point. The SCC measure was mailed to 1800 individuals who had been clients across all settings (e.g., subacute to outpatient) at RRH in a three month period of 2006; 527 (30% response rate) respondents completed the SCC. A cover letter composed by the Director of Quality Management accompanied each survey and a postage paid return envelope was included for the survey return (see Appendix A). The surveys were returned to the non-clinical office (i.e. Quality Management) and stored in a

secured cabinet. Although the survey results were anonymous, they were coded with identification numbers for matching to other administrative data.

## **Measure**

The initial version of the SCC consisted of 41 statements about quality and client perception of care that were then rated using a 5-point scale. Participants could choose from the following response anchors: ‘Always’, ‘almost always’, ‘sometimes’, ‘almost never’, and ‘never’ respectively. The 41 statements from the initial SCC are displayed in Table 2. The first five questions were transition-type questions that were applicable if participants received care in more than one setting. The next twenty-eight questions (6 through 33) were designed to measure the six IOM aims. Questions 34 through 37 emphasized overall services and the final four questions were designed to measure care from an inpatient perspective.

## **Psychometric Analysis**

Data from the returned surveys were entered into an SPSS statistical database. The data were examined and data entry errors were corrected (e.g., 55’s replaced with “5”), resulting in a uniform range of data from ‘1’ to ‘5’ for all responses.

A multivariate statistical textbook guided the analysis (Mertler & Vannatta, 2009). The concepts of Dillman (2000) guided interpretation of results and the work of DeVellis (2003) helped define needs for psychometric analysis. Psychometric analysis revealed a limited range of scores, missing data, and other item difficulties. SPSS ratings of the Flesch-Kincaid Reading Grade Level were generated for each item. The reading grade level is used to rate text based on a U.S. school reading grade level; a score of 8.0 means that an eighth grader could read and understand the item. Table 3.1 displays the survey questions, reading grade level, and percent of missing responses.

Table 3.1. SCC Surveys

|    | Survey statement  | Grade level <sup>a</sup> | <i>M</i> | Variance | % missing responses |
|----|---|--------------------------|----------|----------|---------------------|
| 1  | The transition between services was smooth.   | 6.4                      | 4.75     | .387     | 29.8                |
| 2  | The length of time between services was appropriate.  | 6.7                      | 4.73     | .385     | 29.6                |
| 3  | I felt the information provided about my care was consistent across services.                                     | 10.7                     | 4.78     | .508     | 29.4                |
| 4  | The staff was knowledgeable about my care, my goals, and were picking up where the other service left off.        | 7.9                      | 4.80     | .301     | 28.7                |
| 5  | The care I received was coordinated across settings.  | 8.1                      | 4.79     | .287     | 30.0                |
| 6  | It was apparent to me during my care that safety was a priority.  | 8.5                      | 4.88     | .196     | 3.5                 |
| 7  | The teaching that I received included how to be safe, both in the facility and at home.                           | 7.6                      | 4.84     | .286     | 6.0                 |
| 8  | I understand my restrictions and have the knowledge I need to be safe.  | 8.5                      | 4.83     | .240     | 6.5                 |
| 9  | The admitting process ran smoothly.   | 7.6                      | 4.83     | .296     | 3.8                 |
| 10 | My introduction to the services was complete and helpful.   | 7.5                      | 4.82     | .290     | 3.1                 |
| 11 | The services have helped me progress toward my rehabilitation goals.  | 9.5                      | 4.71     | .432     | 5.6                 |
| 12 | My pain was managed appropriately.  | 9.9                      | 4.66     | .451     | 15.2                |
| 13 | Staff responded in appropriate/effective way to manage any pain or discomfort I experienced while in the program. | 12.0                     | 4.79     | .267     | 14.2                |

Table 3.1 (continued)

|    | Survey statement   | Grade level <sup>a</sup> | <i>M</i> | Variance | % missing responses |
|----|--|--------------------------|----------|----------|---------------------|
| 14 | I was confident in the skills of my health care providers.   | 4.7                      | 4.82     | .274     | 5.0                 |
| 15 | The staff explained treatment/procedures and the nature of their services  | 6.9                      | 4.81     | .272     | 4.8                 |
| 16 | The staff worked together to provide care.   | 3.9                      | 4.82     | .243     | 5.2                 |
| 17 | The staff was accessible to answer questions.  | 7.3                      | 4.78     | .279     | 4.4                 |
| 18 | The staff was supportive and responded to my needs.  | 4.9                      | 4.82     | .290     | 5.0                 |
| 19 | My care was coordinated and efficient.   | 8.3                      | 4.78     | .302     | 5.4                 |
| 20 | I received the information I needed to make decisions about my care.   | 8.7                      | 4.78     | .317     | 7.7                 |
| 21 | The information I received prior to coming to Cardinal Hill was consistent with the program I completed.                         | 11.8                     | 4.68     | .576     | 11.7                |
| 22 | My experience while in the program met my expectations based on the information I received about the program prior to admission. | 12.0                     | 4.74     | .419     | 9.2                 |
| 23 | I felt included as part of the rehabilitation team.  | 8.8                      | 4.79     | .330     | 7.3                 |
| 24 | I participated in the decisions about my rehabilitation goals.   | 12.0                     | 4.74     | .399     | 7.9                 |
| 25 | Information was provided about my treatment and progress.  | 11.1                     | 4.79     | .306     | 6.5                 |
| 26 | I was encouraged to ask questions.   | 4.4                      | 4.70     | .533     | 5.4                 |

Table 3.1 (continued)

|    | Survey statement   | Grade level <sup>a</sup> | <i>M</i> | Variance | % missing responses |
|----|--|--------------------------|----------|----------|---------------------|
| 27 | My values and beliefs for my care were respected.                              | 4.9                      | 4.82     | .292     | 5.6                 |
| 28 | My preferences and values drove all clinical decisions.                        | 9.6                      | 4.63     | .519     | 12.1                |
| 29 | I felt the staff spent time with me.   | 4.0                      | 4.75     | .323     | 5.2                 |
| 30 | My needs were met in a timely manner.  | 2.2                      | 4.76     | .334     | 4.6                 |
| 31 | I had access to resources available within the healthcare system.              | 9.5                      | 4.78     | .346     | 10.6                |
| 32 | I was treated with respect.  | 2.8                      | 4.91     | .125     | 4.4                 |
| 33 | The service I received was fair and equitable.                                 | 6.7                      | 4.87     | .182     | 5.8                 |
| 34 | If I were to seek help again, I would come back to your program.               | 3.3                      | 4.82     | .390     | 3.5                 |
| 35 | I am likely to recommend your facility to others.                              | 8.8                      | 4.86     | .299     | 3.5                 |
| 36 | The instructions I received at discharge were clear.                           | 5.2                      | 4.8      | .408     | 16.3                |
| 37 | I was given information on how to access the resources I need after discharge. | 8.4                      | 4.7      | .624     | 19.2                |
| 38 | Parking was accessible and convenient.   | 12.0                     | 4.61     | .501     | 38.3                |
| 39 | The food choices offered met my expectations.                                  | 5.6                      | 4.4      | .917     | 46.9                |
| 40 | My room and bathroom were kept clean during my stay.                           | 2.4                      | 4.68     | .524     | 47.1                |
| 41 | The facility was accessible to me and my family.                               | 10.2                     | 4.84     | .361     | 41.7                |

<sup>a</sup> Refers to Flesch-Kincaid Reading Grade Level.

Questions related to transitions (1-5) and environment of care (38-41) were particularly vulnerable to missing data (range 28.6% to 47.1%). This pattern of nonrandom missing data would limit future generalizability of results and indicated the presence of an underlying reason for high percentages of missing data. It was determined that the data did not represent a normal distribution; in a normal distribution skewedness and kurtosis, both equal zero. Each variable was negatively skewed (ranging from -5.353 to -2.291) and values for kurtosis were greater than 2.5 (range = 2.5 to 38.8). A ceiling effect was also evident with all being very satisfied which was reflected in a high Cronbach's alpha of .974. Thus, the range of scores was consistently and predictably constricted. Items with missing values from 5% to 15 % were transformed to replace missing values with a series mean via SPSS. Items with missing values greater than 15% were omitted, except for question 12. This question (related to pain) was deemed an important construct in the overall survey process. The head of the multidisciplinary instrument development team enlisted the aid of the author to determine if the SCC questions matched up with the IOM aims as had been assumed in the development of the SCC. A principal components factor analysis with varimax rotation was performed to determine if some overlap existed and to determine if some questions may have been measuring a similar construct. This procedure (factor analysis with varimax rotation) was used in the revision process to combine and to shorten the number of questions on the SCC. The analysis revealed four factors:

- Questions 6, 7, & 8 seemed to measure a similar construct around safety.
- Questions 9, 10, 12, 13, & 36 seemed to focus on either pain or system/administrative-type instructions.

- Questions 21, 22, 23, 24, 26, 28, & 31 seemed consistent with a client-centered theme.
- Questions 11, 14, 15, 16, 17, 18, 19, 25, 27, 30, 32, 33, 34, & 35 loaded on the same factor whose construct was inclusive of many ideas and named general satisfaction.

The SCC in its pilot form did not match the constructs for which it was intended, the six IOM aims. These results provided a basis to begin to revise the instrument.

Feedback provided by participants based on comments written on the returned surveys indicated that the survey was too long and needed to be shortened from 41 questions/statements. The client-centeredness aspect did not appear to be captured secondary to the high percentages of missing data. A goal for the revision was to ask questions that might result in a greater average range of mean scores ( $>4.4 - 4.91$  on a 5 point scale). This concluded the analysis of the pilot version of the SCC and a revision process was initiated.

## **Dissertation Study**

### **Population**

All participants were adults ranging in age from 18 to 100 years old that received inpatient and outpatient rehabilitation services from Cardinal Hill Rehabilitation Center. There are data on 1104 patients served by Cardinal Hill between 8/30/06 and 11/20/2008. All adults 18 and older that were served were eligible to be included in the data collection. There are 452 patients with neurological or spinal cord injuries. There are 652 with orthopedic and other non-neurological conditions. All eligible participants received a satisfaction survey through a mailing. The mailing included the elements of informed consent. Participants completed the survey and mailed the survey to Cardinal Hill in a



business reply envelope. Participation was voluntary and no additional requests for completing the survey were sent after the initial mailing. Additional demographics are displayed with each research question in the Dataset section.

## **Measures**

**Redesign of the SCC measure: Part 2.** Scale development, according to DeVellis (2003), requires testing and re-designing measures to obtain optimal data. Outcomes from the instrument pilot precipitated a revision of the SCC. Construction of questions with a continuum-of-care perspective emphasizing the IOM aims was a formidable challenge. The pilot SCC was constructed in a committee format by multiple stakeholders that diluted the client-centeredness aspect of the measure and resulted in a mixed quality of items. A large percentage of missing data indicated that the intent of the questions was not conveyed in a meaningful way to the participants. The reading grade level of each question was critically examined to aid in the revision process; some questions had a higher reading grade level than recommended by Dillman (2000). In the SCC revision, the literacy level was changed from a tenth grade level to third or fourth grade. Grade level is measured by readability statistics (Flesh-Kincaid) that are available in Microsoft Word. Clients must understand the questions to reliably participate in outcomes measures.

The length of the SCC was shortened from the original format of 41 questions to 23. It was hoped by inviting greater participation with an increased client-centered focus, the data would be more complete, with higher reliability and validity. Questions were designed to ask about client's perceptions of their care, making this more client-centered. The questions were both simpler yet asked more details about client's care. The original inclusion criteria had been all clients in the healthcare system served during the

designated time period. This inclusion criterion was revised to include only adults eighteen years of age and older as the target audience for this particular measure was adults and not pediatric patients. The range of scores was generally constricted in the pilot and in revision, it was hoped that the average range of mean scores could be expanded by including questions that were more narrowly based on details of care and on client perception, rather than many questions covering a broad scope of areas related to satisfaction at RRH. Preliminary content validity was established by a panel of individuals (no greater than a high school education) and the survey revision team. Each question was evaluated and revised until agreement was reached regarding the meaning/intent of each question (DeVellis, 2003) and an acceptable reading level.

The revised SCC was sent to all individuals receiving care in the next quarter which was the first quarter of 2007 ( $N = 1200$ ). The data were preliminarily analyzed by item analysis, factor analysis, and evaluation of the range of scores to determine if the data were more complete compared with the pilot data. These analyses will be refined for this present dissertation research, but the preliminary analysis conducted for the RRH suggested that this measure had much improved reliability. There was a greater range of scores and more complete data. The revised SCC is included in Appendix B.

**Functional Independence Measure.** The Functional Independence Measure (FIM) will be used in this study as a measure of functional status and a potential correlate of satisfaction. The FIM is part of the Uniform Data System for Medical Rehabilitation and is used in hundreds of rehabilitation hospitals (Ottenbacher et al., 1996; Shah et al., 2007). It is composed of 18 items designed to assess the amount of assistance required for persons with disability to perform activities of daily living safely and effectively and

total scores range from 18 to 126 with higher scores indicating high functioning. Scoring levels are defined; a score of '7' means complete independence and a score of '1' means total dependence. There are two primary domains associated with the FIM, Motor and Cognitive. The Motor domain includes thirteen items including self-care, sphincter control, transfers, and locomotion. The Cognitive domain consists of five items measuring communication and social cognition subscales. Based on a review of eleven articles reporting FIM reliability, Ottenbacher et al., (1996) concluded that the FIM provided reliable information regarding clients across different populations, multiple settings when used by trained clinicians. A full description of the FIM and related research was included in chapter 2. In this study, total FIM scores at intake and discharge were used with an indicator of the amount of change from intake to discharge. In addition, the total FIM score for self-care at admission, discharge, and a change score was used because of its relevance to occupational therapy.

**Inpatient Rehabilitation Facility–Patient Assessment Instrument.** Information taken from the IRF-PAI instrument (Appendix C) was used in this study to provide descriptive and medically related admission and pertinent discharge data associated with the participants. The IRF-PAI instrument was used to gather data to assist in determining the payment for each Medicare Part A fee-for-service client admitted to an inpatient rehabilitation unit or hospital as mandated by the Centers for Medicare and Medicaid Services as part of the Inpatient Rehabilitation Hospital Prospective Payment System (IRF PPS). The IRF-PAI admission patient assessment is administered by nursing and rehabilitation staff and other personnel. It is used to classify patients in a Case-Mix Group (CMG) that determines the inpatient rehabilitation facility's reimbursement based

on conditions and a severity index. The data collected on the IRF-PAI are also used for quality of care purposes. The IRF-PAI instrument is composed of nine categories including: identification information; admission information; payer information; medical information; medical needs; functional modifiers; FIM Instrument; discharge information; and quality indicators.

The initial identification information section contains the patient's pertinent identification numbers and demographic information (e.g., gender, ethnicity, marital status). Admission dates, the location that the patient was previously living prior to admission as well as pre-admission vocational status is contained in the admission information. Payer information is composed of the primary and secondary sources of payment for the inpatient rehabilitation facility. Date of onset, diagnostic categories, and co-morbid conditions are found within medical information. A patient's status in terms of coma, delirium, swallowing and dehydration status are presented in the medical needs section. Functional modifiers include functional items that are related to levels of bowel and bladder assistance needed, tub and shower transfers, and walking or wheelchair use by the participants. Next is the FIM data collection instrument composed of the motor and cognitive scales rated by level of assistance. Discharge information contains the discharge date, discharge location, services and supports post-discharge, and complications that may have occurred during the rehabilitation admission. A patient's pain rating, respiratory status, safety status, and associated pressure ulcer information is contained in the quality indicator section of this instrument. From these data, independent variables based on the research questions were selected for this research study and described later.

## **Dataset**

**Demographic and process variables.** The Quality Manager at RRH merged existing administrative data on length of stay, services, and data from the IRF-PAI and FIM into the satisfaction data set using the RRH's identification numbers, resulting in a wide range of indicators or potential variables in a combined dataset. The de-identified dataset was prepared for this research study by the Quality Manager. The potential variables were reduced in number and relevance corresponding to the research questions listed in Chapter 1. The variables included in this analysis taken from the combined dataset are displayed later in association with each research question. The variables were pared down to reflect the relevance of the research questions listed in Chapter one and to provide a related foundation to begin to analyze the data (e.g., logistic regression and model building). Additional variables such as grouping indicators were added. Some items were eliminated such as the presence of skin ulcers because only a few participants had these conditions. Use of this existing de-identified dataset was approved through the University of Kentucky Internal Review Board (Appendix D) and the RRH research committee. Research questions and the rationale for variables selected are explored in the next section.

## **Research Design**

The following sections display each research question and the independent variables associated with that research question. The dependent variable in all cases will be one or more scores on client satisfaction from the SCC.

### **Research Question 1: How Do Client Demographic Variables Contribute to Models of Client Satisfaction in Rehabilitation?**

Age, ethnicity, and gender were often used to describe participants in previous satisfaction studies discussed in chapter two. Age was a variable related to satisfaction with varying results in previous studies (see Table 3.2).

Table 3.2. Descriptive Statistics for Research Question 1

| Independent variables | Data description   |
|-----------------------|--|
| Age at admission      | Mean Age = 68.47 years. Mode = 78 years. Quartile Groups = 18 to 59 years, 60-71 years, 72 to 80 years, 81 to 100 years. |
| Gender                | Males = 40.8%; Female = 59.2%  |
| Race                  | Caucasian = 94.4%; African American = 4.3%; Other (Hispanic, Asian, or multi-racial) = 1.3%.                             |

### **Research Question 2: How Does Functional Status and Self-Care Functional Status at Admission and Discharge Contribute to Models of Client Satisfaction in Rehabilitation?**

Functional status, as measured on a FIM scale was often used in studies included in chapter two as a correlate of participants' satisfaction. Self-care functional status is a FIM category that is mostly associated with occupational therapy rather than physical or speech therapy in a typical rehabilitation setting (see Table 3.3).

### **Research Question 3: How Does the Client's Medical Status (e.g., How Sick They Are, Medical Complications) Contribute to Models of Client Satisfaction in Rehabilitation?**

Variables associated with this research question were selected because they provide descriptive information regarding a participant's level of severity with respect to medical status that is measured by diagnosis, pain level, and other conditions that affect functional status and primary diagnosis (e.g., severity, complexity, and pain). These variables, when entered into a logistic regression or in a model describing attributes of

Table 3.3. Descriptive Statistics for Research Question 2

| Independent variables         | Data description   |
|-------------------------------|--|
| Total FIM Scores at Admission | Functional status at admission as measured by Total FIM. Scores range from 18-101 with a mean of 59.51.  |
| Total FIM Scores At Discharge | Functional status at discharge as measured by Total FIM Scores with scores ranging from 20-122 with a mean of 91.22  |
| FIM Self Care Admission       | Sum of 6 items on the FIM to measure Self-Care function (eating, grooming, bathing, upper extremity dressing, lower extremity dressing, and toileting). Range of scores 6-35 with mean of 19.45. |
| FIM Self Care Discharge       | Sum of 6 items on the FIM to measure Self-Care function (as above). Range of scores 6-42 with a mean of 31.9.  |

satisfaction, could provide useful information in how “sicker” participants perceive satisfaction (see Table 3.4).

#### **Research Question 4: How Does Variation in Rehabilitation Processes Contribute to Models of Client Satisfaction in Rehabilitation?**

The process variables associated with this research question were selected because they provide descriptive information regarding the participant’s experiences in rehabilitation. The speed of initiating rehabilitation services and the duration of services may influence satisfaction as found in other previous studies (see Table 3.5).

#### **Research Question 5: How Do the Client’s Gains and Discharge Situation Relate to Models of Satisfaction in Rehabilitation?**

This research question focuses on functional gains as shown in other studies. The amount of progress may or may not be related to satisfaction (see Table 3.6).

#### **Research Question 6: How Do Occupational Therapy Services Contribute to Models of Satisfaction in Rehabilitation?**

Clinicians would expect there is a strong correlation between satisfaction with continuum of care and the provision of occupational therapy services with participants.

Table 3.4. Descriptive Statistics for Research Question 3

| Independent variables                      | Data description   |
|--|--|
| Neurological or non-neurological condition | <p>Grouping based on Clinical Diagnosis</p> <p>Neurological Disorders = 452 clients (40.9%)</p> <ul style="list-style-type: none"> <li>75 spinal cord injury, 100 brain injury, 49 general neurological, 228 stroke</li> </ul> <p>Non-neurological Disorders = 652 clients (59.1%)</p> <ul style="list-style-type: none"> <li>32 amputations, 2 burns, 107 general rehabilitation, 88 pulmonary, 16 sub-acute, 407 orthopedic</li> </ul> |
| Severity index                             | Rated on admission based on a range of factors using the Inpatient Rehabilitation Facility Patient Assessment Instrument (IRF-PAI). Ten point scale with 1= least severity and 10=Most severity. The rehabilitation hospital receives a higher rate of reimbursement for cases with higher severity.   |
| Total co-morbid conditions complexity      | Total number of co-morbid conditions based on summing the number of ICD-9 Co-morbidity codes. Used as a measure of complexity in this study.   |
| Pain rating at admission                   | Rated by client on a 0-10 pain scale with 10 being extreme pain. 73.2% of clients had some pain at admission with the average pain rating of 5.47 and 50% (median) of clients rated pain between 7-10.   |
| Pain rating at discharge                   | Rated by client on a 0-10 pain scale with 10 being extreme pain. 60.8% of clients had some pain at discharge with the average pain rating of 4.0 and 50% of clients rated pain at 5 or higher.   |

Table 3.5. Descriptive Statistics for Research Question 4

| Independent variables                      | Data description   |
|--|--|
| Days from condition onset to RRH admission | Range in months from 0 to 648 months. Range from 0 days to 50+ years Mean = 3.04 months; Median = 7 days. Two groups. 0-15 days (75% of clients) and greater than 16 days. |
| Length of stay in rehabilitation           | Range in days 1-77 days. Mean = 13.13 days. Quartile groups by Days: 1-8 days, 9-13 days, 14-20 days, 21-77 days.  |
| Total hours of rehabilitation therapy      | Sum of all hours of rehabilitation therapy provided by Occupational, Physical or Speech Therapy. Total hours ranged from 1-232.25 with an average of 35.89 hours.          |



Table 3.6. Descriptive Statistics for Research Question 5

| Independent variables                            | Data description   |
|--|--|
| Pain change group at discharge                   | 49% of clients reported a decrease in pain from admission to discharge with 14.1% having more pain while 22.6% did not report pain at intake or discharge. |
| Discharge to living situation (from the IRF-PAI) | ‘Home’ or ‘Not to Home’ (e.g., skilled nursing facility or other dependent living situation). Home = 952 (86.2%); Not home = 152 (13.8%).                  |
| Change in total FIM from admin to DC             | Total change in FIM scores from admission to discharge with a range of -12 (declined function) to 83 (improved) with a mean of 31.62                       |

One method to “tease out” the contribution of occupational therapy will be in examining the sub-domains of the FIM specific to that discipline (e.g., self-care). This FIM information coupled with the hours of occupational therapy test the correlation between this discipline’s services and client satisfaction (see Table 3.7).

Table 3.7. Descriptive Statistics for Research Question 6

| Independent variables      | Data description   |
|----------------------------|--|
| OT Sessions Hours          | Total number of hours of Occupational Therapy received. Total hours ranged from 0-79.25 with an average of 14.12 hours |
| FIM Self-Care Change Score | Total change in FIM self-care scores from admission to discharge. Range of scores -10 to 34 with a mean of 12.4.       |

### Data Analysis Plan and Modeling Building

The data analysis was conducted in phases. The first phase included extensive descriptive statistics for all independent variables and these data are displayed here. This step identified missing data, variables that clustered with a ceiling effect, and the prevalence of gender and disability groups. This step contributed to cleaning the data and

making decisions about how to handle duplicate cases, missing data, cutoff points, and opportunities to develop composite or additional indicators like length of stay or number of co-morbid conditions. Based on this analysis, the data were cleaned, some variables/cases eliminated, and demographic data for all participants were generated to describe the population.

Prior to defining the variables, the raw dataset was explored and cleaned. There were 662 duplicate entries or cases where the individual completed a second or third round of rehabilitation services. For these, the satisfaction survey from the first entry was selected to consistently gauge satisfaction related to the first treatment episode. The satisfaction data on second episodes of treatment was eliminated from the dataset. Seven cases that were less than 18 years old at the time of admission to rehabilitation were eliminated from the study.

For 90 clients, data for all questions on the satisfaction survey were missing for 11 questions. It was noted that these questions were all on page two of the survey that required the respondent to turn the page over. To determine if the omissions were due to some bias, chi-square analysis was completed. There were no differences in those that completed or failed to complete page two based on gender, rehabilitation type code, whether or not they received any type of therapy, or inpatient or outpatient services. There were significant differences in the persons that completed or failed to complete page two based on age with older individuals more likely to fail to complete page two. These incomplete responses were identified but retained in the dataset; however, the results of this study based on age will be interpreted cautiously related to this limitation.

In phase two, psychometric analysis including item analysis, reliability testing using Cronbach's alpha, and factor analysis of the survey instrument were conducted to enhance future implementation. Then the data were examined using factor analysis to determine the alignment with the IOM aims.

In phase three, indicators were added to the dataset to capture specific constructs or to reduce the number of variables in the dependent measure. The factor analysis revealed domains or constructs that were summed as subscales. Based on indicators used in the dataset, comparative statistics (e.g., chi-square or t-tests, or one-way ANOVA) were used to build understanding of variables that contribute to distinguishing between groups.

In phase four, a series of thoughtfully applied logistic regression analysis were used to determine the predictors of satisfaction. In order to use logistic regression, the dependent variable (satisfaction) or domains of satisfaction was dichotomized as discussed later. There are numerous choices in how to create a dichotomized outcome including setting cutoff points based on factor scores or stratifying the sample into highly satisfied and not satisfied; these choices will be based on the earlier analysis and described in Chapter 4. Phase four also included using the results of the logistic regression to develop a path diagram that will display the directional relationships between independent and dependent variables.

Model building is not a prescribed procedure, rather it is a thoughtful procedure guided by theory and practical considerations such as the variables selected for this analysis based on the research questions of this study. In interpreting the logistic regression for model building the level of significance was evaluated using  $\alpha = 0.10$ . A

larger than customary level of significance (0.05) was utilized to reduce the likelihood of a Type II error (i.e., not detecting real differences) (Tabachnick & Fidell, 1996).

Human subject approval was obtained from the Office of Research Integrity (IRB) at the University of Kentucky and the Internal Review Board of the RRH. The data used in this dissertation research are secondary data without any indicators that can be tied to a specific person; no date of birth, name, social security or other common identifiers protected by HIPPA are included.

**Working model.** This graphical representation (Figure 3.1) presents the variables or groups of variables that are associated with each research question as being correlations of patient satisfaction in the working model.

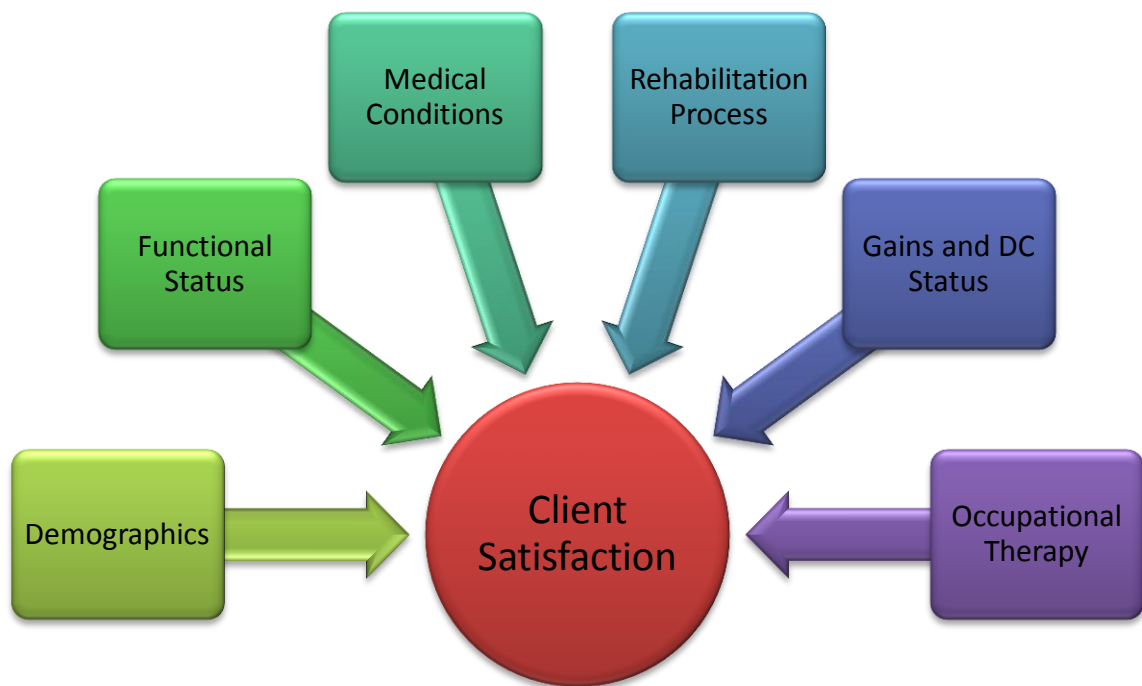


Figure 3.1. Working model: Correlates of client satisfaction.

## CHAPTER FOUR:

### RESULTS

In this chapter, the results of two phases of analysis are reported. The first phase includes a psychometric analysis of the Satisfaction with Continuum of Care (SCC) survey including reliability statistics, a factor analysis to identify subscales, and descriptive statistics for each of two subscales. In this phase, the survey responses were treated as interval data, the few missing responses were replaced with a '3' (neutral) so that all the client responses were included. In the second section, the results of the logistic regression analysis for each research question are reported and organized by the research question. Prior to the logistic regression decisions were made on defining satisfaction and dissatisfaction. The data were also checked for conditions such as correlations of the variables that might impact the results of logistic regression. The final section of this chapter includes a synthesis of the predictors of client satisfaction.

#### **Psychometric Analysis of the SCC**

##### **Internal Consistency**

All analyses were performed using SPSS software (Version 19). In the first analysis, the overall reliability as measured by Cronbach's alpha was examined. The Cronbach's alpha of 0.970 suggests excellent internal consistency. That is, the items on the SCC seem to be measuring a consistent construct. Item analysis is displayed in Table 4-1. As seen in this table, all of the items contributed to the high reliability. That is, none of the SCC items stood out as having issues that would diminish reliability. Thus, all of the SCC items were retained in subsequent analysis.

Table 4.1. Reliability Analysis for Each SCC Item or Statement

| SCC statement   | Scale mean if<br>item deleted | Scale variance<br>if item deleted | Cronbach's<br>alpha if item<br>deleted |
|---|-------------------------------|-----------------------------------|--|
| I felt good about the quality of my care  | 98.81                         | 163.552                           | .969                                   |
| The quality of my care did not change from person to person                     | 99.09                         | 161.601                           | .970                                   |
| I felt confident in the skills of those who helped me                           | 98.87                         | 163.072                           | .969                                   |
| Staff taught me how to be safe  | 98.87                         | 163.996                           | .969                                   |
| The staff who helped me told me what they were doing and why they were doing it | 98.91                         | 163.039                           | .969                                   |
| I was involved in making decisions about my care with the help of the staff     | 99.15                         | 160.922                           | .969                                   |
| What I thought seemed to matter to the staff                                    | 99.06                         | 160.407                           | .968                                   |
| I was able to ask questions   | 98.92                         | 163.619                           | .969                                   |
| I was not forced to do anything I felt was not helping me                       | 98.99                         | 162.044                           | .969                                   |
| I played an active part in my care  | 98.96                         | 163.030                           | .969                                   |
| I was treated with respect  | 98.82                         | 163.879                           | .969                                   |
| If I had pain, it seemed that staff tried to help me                            | 98.89                         | 163.174                           | .969                                   |
| The staff worked together to help me  | 99.03                         | 160.005                           | .968                                   |
| Staff seemed to care about me and my needs                                      | 99.03                         | 159.193                           | .968                                   |
| The staff seemed to be in touch with each other about my care                   | 99.13                         | 158.124                           | .968                                   |

Table 4.1. (continued)

| SCC statement  | Scale mean if item deleted | Scale variance if item deleted | Cronbach's alpha if item deleted |
|--|----------------------------|--------------------------------|----------------------------------|
| If I had to wait for something, it was not very long           | 99.20                      | 158.346                        | .968                             |
| My care took place in a timely and efficient manner            | 99.12                      | 158.165                        | .968                             |
| I was kept informed of delays                                  | 99.28                      | 157.479                        | .968                             |
| I felt the staff spent time with me                            | 99.12                      | 158.473                        | .968                             |
| While here, I have been helped to get better                   | 98.96                      | 160.132                        | .968                             |
| If I needed help again, I would come back here                 | 98.93                      | 159.323                        | .968                             |
| I would recommend Cardinal Hill to other people                | 98.90                      | 159.875                        | .968                             |
| The instructions that I received at discharge were clear to me | 99.04                      | 159.712                        | .969                             |

### Factor Structure

In this phase of analysis, the survey responses were treated as interval data, the few missing responses were replaced with a '3' (neutral) so that all the client responses were included in the factor analysis. An initial data reduction was performed using principal components analysis and exploratory factor analysis with no prior assumption to reveal the underlying constructs or domains within the SCC. All 23 items on the SCC with a scaled response (Likert-type five-point rating) were entered into the factor analysis. This exploratory analysis was intended to identify the factor structure or model for the set of variables that were represented within the SCC, and guide decision-making for the number of factors that would make up SCC subscales. The factors were rotated

using a varimax rotation that creates orthogonal factors. The initial factor analysis results yielded two factors. Because of the desire to test if the survey mirrored the IOM model with three to six factors, a three- factor solution was forced, but yielded one factor with only a one-item loading. The scree plot and the eigenvalues suggested that a two-factor solution tended to underlay the scale. Therefore, a two-factor structure was used because it was most interpretable and accounted for the highest percentage of variance. The two factors related back to the IOM themes of clinical quality, efficiency, and client-centeredness. Thus the two factors were labeled '*clinical quality*' and '*client-centeredness*' to reflect these IOM concepts. The first factor of clinical quality was associated with explaining 60.68 % of the total common variance and the second client-centeredness factor was associated with explaining 11.15 % of the total common variance. The total variance explained by the two factors combined was 72.0% of the total variance. Table 4.2 displays the factor loadings for the SCC subscales.

Further investigation of the rotated factor loadings (Table 4.3) revealed that all items weighted cleanly on two factors with all weightings above the .70 level. There were no items with factor weightings below the .70 level.

The *clinical quality* subscale included concepts of efficiency and effectiveness of care and a sense of teaming toward improvement. Based on congruence with the IOM (2001) model, clinical quality encompassed four of the aims of effectiveness, safety, timeliness, and equity. Previously in the IOM model, these terms were defined as: effectiveness in consistently using evidence-based best practices at any level of care provided (e.g., being willing to recommend the facility to others or being helped to get better); safety in avoiding injury to patients/clients while they were seeking medical care;



Table 4.2. Factor Loadings for SCC Subscales

| SCC items   | Subscales           |                        |
|---|---------------------|------------------------|
|   | Clinical<br>quality | Client<br>centeredness |
| I would recommend Cardinal Hill to other people                                 | .864                |                        |
| Staff seemed to care about me and my needs                                      | .856                |                        |
| If I needed help again, I would come back here                                  | .855                |                        |
| While here, I have been helped to get better                                    | .847                |                        |
| My care took place in a timely and efficient manner                             | .828                |                        |
| The staff worked together to help me  | .827                |                        |
| I felt the staff spent time with me   | .824                |                        |
| The staff seemed to be in touch with each other about my care                   | .796                |                        |
| The instructions that I received at discharge were clear to me                  | .792                |                        |
| If I had to wait for something, it was not very long                            | .764                |                        |
| I was kept informed of delays   | .740                |                        |
| I was not forced to do anything I felt was not helping me                       |                     | .794                   |
| What I thought seemed to matter to the staff                                    |                     | .791                   |
| I felt confident in the skills of those who helped me                           |                     | .771                   |
| I was able to ask questions   |                     | .768                   |
| I played an active part in my care  |                     | .765                   |
| The staff who helped me told me what they were doing and why they were doing it |                     | .763                   |
| I was treated with respect  |                     | .757                   |
| Staff taught me how to be safe  |                     | .737                   |

Table 4.2. (continued)

| SCC items   | Subscales        |                     |
|---|------------------|---------------------|
|   | Clinical quality | Client centeredness |
| I felt good about the quality of my care                                    |                  | .730                |
| If I had pain, it seemed that staff tried to help me                        |                  | .727                |
| I was involved in making decisions about my care with the help of the staff |                  | .723                |
| The quality of my care did not change from person to person                 |                  | .709                |

timeliness in care by reducing wait times and delays (e.g., not waiting long, being kept informed of delays or care provided in timely and efficient manner); equitability or equitable care in having a consistent quality of care without variation from place to place (e.g., staff in touch with each other about care).

The *Client centeredness* subscale represented the IOM concepts of responsiveness and respectfulness of client needs and values with client needs guiding decisions (e.g., client thoughts matter, active part in care, and involvement in decision-making). The results of this survey were organized by these two domains or subscales.

The values for the internal consistency for clinical quality and client centeredness factors were alpha coefficients of 0.91 and 0.83, respectively. Although these alpha coefficients are lower than the overall scale, the conceptual richness of having two factors, both with good internal consistency, was deemed most interesting and consistent with the goals of this present study. On the other hand, it could be argued with some validity that the scale is a uni-dimensional scale. The means and standard deviations by subscale are presented in Table 4.3 and 4.4.

Table 4.3. Client-Centeredness: Descriptive Statistics

| SCC   | <i>M</i> | <i>SD</i> |
|---|----------|-----------|
| I was involved in making decisions about my care with the help of the staff     | 4.35     | .794      |
| The quality of my care did not change from person to person                     | 4.41     | .844      |
| What I thought seemed to matter to the staff                                    | 4.45     | .758      |
| I was not forced to do anything I felt was not helping me                       | 4.52     | .714      |
| I played an active part in my care  | 4.54     | .671      |
| I was able to ask questions   | 4.59     | .629      |
| The staff who helped me told me what they were doing and why they were doing it | 4.60     | .673      |
| If I had pain, it seemed that staff tried to help me                            | 4.61     | .674      |
| Staff taught me how to be safe  | 4.63     | .645      |
| I felt confident in the skills of those who helped me                           | 4.64     | .638      |
| I was treated with respect  | 4.68     | .609      |
| I felt good about the quality of my care  | 4.69     | .624      |

### Predictive Modeling

#### Defining the Dependent Variable

Following the factor analysis, the next step was to determine how to define ‘satisfied’ and ‘dissatisfied’ categories using the subscales scores that could be used as the dependent variable in a logistic regression model. This phase was difficult because as the literature review identified (see Chapter 2), participants in patient satisfaction surveys generally rate their satisfaction very high. Therefore, determining dissatisfaction levels and a “cutoff” point for dissatisfaction that made conceptual sense was difficult. The process for defining satisfaction and dissatisfaction levels for both the clinical quality and

Table 4.4. Quality of Clinical Service Delivery: Descriptive Statistics

| SCC  | <i>M</i> | <i>SD</i> |
|--|----------|-----------|
| I was kept informed of delays                                  | 4.23     | .862      |
| If I had to wait for something, it was not very long           | 4.30     | .832      |
| The staff seemed to be in touch with each other about my care  | 4.37     | .819      |
| I felt the staff spent time with me                            | 4.38     | .797      |
| My care took place in a timely and efficient manner            | 4.38     | .794      |
| The instructions that I received at discharge were clear to me | 4.47     | .803      |
| Staff seemed to care about me and my needs                     | 4.48     | .759      |
| The staff worked together to help me                           | 4.48     | .746      |
| While here, I have been help to get better                     | 4.54     | .758      |
| If I needed help again, I would come back here                 | 4.57     | .791      |
| I would recommend Cardinal Hill to other people                | 4.60     | .771      |

client-centered subscales is described in the following section. In this step, the original raw data without replacement of missing data was used to ensure the most accurate reflection of client's responses.

For the client-centered and clinical quality subscales, the five rating options on the Likert-type subscales ranged from '1' (strongly disagree) to '5' (strongly agree). For this study, 'satisfied' was defined as a rating of '5' (strongly agree) on every item on the subscale. This was defined as 100% satisfied, meaning that respondents strongly agreed with each and every statement. This value of 55 on the clinical quality subscale (11 items) and 60 on the client-centeredness subscale (12 items) was coded as '1' in the logistic equation analysis and defined as 100% satisfied. Approximately 38% of the entire sample was included in this 100% satisfied group.

Defining dissatisfied was more conceptually and statistically challenging. After exploring several ideas, the most conceptually sound definition that produced an adequate sample size was defined as a rating of at least one item on the respective subscales as a '1' (strongly disagree), '2' (disagree), or '3' (neither agree nor disagree). This cutoff was then defined as dissatisfied; that is the participant expressed dissatisfaction on a least one item (See Tables 4.6 and 4.7). By including a '3', in this measure of dissatisfaction, the purpose was to remain congruent with the literature with respect to determining dissatisfaction. The satisfaction literature has stated that sometimes when a participant is dissatisfied, they will score an item a '3' as their lowest level of dissatisfaction, rather than choose a lower rating that expresses clear disagreement. This neutral response is thought to preserve the interpersonal connection that is important in the rehabilitation process without committing to endorsing dissatisfaction. This cutoff point compensates for the social desirability bias of satisfaction surveys. By stratifying the sample in this way, the data from those that were neither 100% satisfied nor expressed any dissatisfaction was excluded from the subsequent logistic regression. On the other hand, the remaining groups of satisfied and dissatisfied would likely be more homogeneous and sensitive to group differences.

Table 4.5 displays the number of participants in each group on the dependent variable. The number of participants excluded from the analysis includes those who did not have a rating of either all 'strongly agree' (all '5's) or a score or endorsement on at least one item of the subscale rating categories of strongly disagree (1), disagree(2), or neither agree nor disagree (3). Table 4.6 displays the participant numbers for the Clinical Quality Subscale.

Table 4.5. Client-Centered Subscale

|   | Frequency | %    | Valid<br>% |
|---|-----------|------|------------|
| Dissatisfied-at least one rating of '1'(strongly disagree), '2' (disagree), or '3' (neither agree nor disagree) | 223       | 20.2 | 34.8       |
| 100 % Satisfied = 60 <sup>a</sup>   | 418       | 37.9 | 65.2       |
| Total included in the logistic regression   | 641       | 58.1 | 100.0      |
| Number of participants' data excluded from the analysis as neither satisfied or dissatisfied                    | 463       | 41.9 |            |

<sup>a</sup> Highest score possible on the 12-item client-centered subscale

Table 4.6. Clinical Quality Subscale

|   | Frequency | %    | Valid<br>% |
|---|-----------|------|------------|
| Dissatisfied-at least one rating of '1'(strongly disagree), '2' (disagree), or '3' (neither agree nor disagree) | 184       | 16.7 | 30.1       |
| 100 % Satisfied = 55 <sup>a</sup>   | 428       | 38.8 | 69.9       |
| Total included in the logistic regression   | 612       | 55.4 |            |
| Number of participants' data excluded from the analysis as neither satisfied or dissatisfied                    | 492       | 44.6 |            |

<sup>a</sup> Highest score possible on the 11-item clinical quality subscale

### **Diagnostic Statistics for Logistic Regression**

Prior to running the logistic regression analysis to answer the research questions, the data were examined for issues related to multicollinearity, or high correlations among the predictor variables. Tabachnick and Fidell (1996) advise that high correlations between predictor variables suggest redundancy in the variables and if this state is found they recommend that one of the redundant variables be eliminated. SPSS diagnostic

procedures for regression analysis were used to check the collinearity for each group of independent variables by research question. None of the variables for any single question were found to be redundant, so all were retained.

The data were also checked for accuracy using procedures for identifying outliers. A few errors in data entry were identified in this way and the data were corrected.

Finally, diagnostic statistics for goodness-of-fit were run to determine any limitations in the data. The goodness-of-fit statistics suggested a poor fit of the model for logistic regression for all research questions. According to Tabachnick and Fidell (1996), model fit is contingent on two independent characteristics: one is sample size and the other is significance. With very large samples, the results will be significant but perhaps not meaningful; the fit could be perfect or not. In this present study, there were small sample sizes especially in certain cells. For example, only 35 people with a non-white race code were included in the study. Because of the need to stratify the sample, the sample size especially in the dissatisfied group was diminished. Thus, in interpreting the results, the smaller sample size included in this study likely reduced the model fit. However, the results that are found to be statistically significant are more likely to also be important. This limited goodness of fit suggests the need to interpret the results cautiously.

### **Answering the Research Questions**

After determining or defining the categories of satisfied versus dissatisfied for each subscale on the SCC, a logistic regression analysis was conducted for each research question using the dependent variable and independent variables associated with each. The dependent variable in all cases was satisfaction versus dissatisfaction on the client-centeredness or clinical quality subscale from the SCC. The independent variables were

specific to each question as outlined in Chapter 3. The binary logistic regression was implemented using the Forced Entry Method in which all variables are tested in one block to assess their predictive ability while controlling for the effects of the other predictors. Although this is the default procedure for SPSS, the alternative procedure of stepwise logistic regression is subject to random variations in the data and statistical exploration and elimination rather than conceptual decisions (Tabachnick & Fidell, 1996). The alpha level or level of significance for the analysis was set at 0.10. The results are organized in the following sections by the research question.

**Research question 1: How do client demographic variables contribute to models of client satisfaction in rehabilitation?** Binary logistic regression was conducted to determine if client demographic variables (e.g., age at admission, gender, or race) were significant predictors of client satisfaction on either the client centeredness or clinical quality subscales. There were no predictive relationships of statistical significance between the demographic variables and satisfaction with clinical quality. However, the age group of 60-71 years was significantly predictive of satisfaction with client centeredness. These results are displayed in Table 4.7.

The logistic regression model tested the effects of age, race, and gender on satisfaction with client centeredness. As shown in Table 4.7, one demographic variable was significant in the predictive satisfaction model. The odds ratio of .61 and the negative B value (-.498) for clients who were between the ages of 60-71 years indicates all other groups were .61 times less likely to report satisfaction for the client-centeredness subscale of the predictive model. Stated another way, the 60-71 years old group was 1.64 times (1/.608) or 64% more likely to report satisfaction on the client centered subscale. There was no significant effect of any other age group at admission, race, or gender.



Table 4.7. Client Demographics: Predicting Satisfaction with Client Centeredness

|   | B     | SE   | Wald  | df | Sig. | Exp(B) | 95% C.I. for<br>EXP(B) |       |
|---|-------|------|-------|----|------|--------|------------------------|-------|
|   |       |      |       |    |      |        | Lower                  | Upper |
| Age 18-59 years<br>( <i>n</i> = 181)        | .086  | .231 | .139  | 1  | .709 | 1.090  | .693                   | 1.715 |
| Age 60-71 years<br>( <i>n</i> = 156)        | -.498 | .248 | 4.033 | 1  | .045 | .608   | .374                   | .988  |
| Age 81-100 years<br>( <i>n</i> = 148)       | -.137 | .239 | .329  | 1  | .566 | .872   | .546                   | 1.393 |
| White/Non-white<br>( <i>n</i> = 35)         | .225  | .380 | .350  | 1  | .554 | 1.252  | .595                   | 2.637 |
| Gender ( <i>M</i> = 245;<br><i>F</i> = 396) | .070  | .173 | .163  | 1  | .686 | 1.073  | .763                   | 1.507 |
| Constant                                    | 1.016 | .457 | 4.933 | 1  | .026 | 2.761  |                        |       |

To examine this finding, additional analysis (i.e., Chi-Square and One-Way Anova) was performed to examine the 60-71 age group for significant differences between that group and the other age groups. There were no significant differences in types of diagnoses (neurological (*n* = 109 vs. non-neurological *n* = 170), days from onset to admission to rehabilitation, ethnicity, gender, or discharge status. There were no differences in measures of between groups (average 4.1 for 60-71 years old vs. average of 4.2 not 60-71 years old). There also were no statistically significant differences in pain at admission, total co-morbidities, self-care changes, or total rehabilitation hours. Pain at discharge was significant ( $p = .048$ ) and the 60-71 age group had more pain at discharge, on average than the participants who were not 60-71 (4.41 vs. 3.92). Except for this

rather confusing pain at discharge finding, the 60-71 year old group was nearly identical to the other groups; no group differences explained the finding of higher satisfaction.

**Research Question 2: How does functional status and self-care functional status at admission and discharge contribute to models of client satisfaction in rehabilitation?** Binary logistic regression was conducted to determine if functional status scores (e.g., FIM scores at admission and discharge and FIM self-care scores at admission and discharge) predicted the dependent variable of satisfaction on either client centeredness and/or clinical quality. In this analysis, the Total FIM Scores at admission and discharge were calculated without the Self-Care items to eliminate the redundancy of measures. That is, FIM self-care scores are typically part of the Total FIM scores, but were separated for this analysis to highlight self-care as a variable with particular relevance to occupational therapy. The FIM self-care at discharge score as an independent variable was predictive of satisfaction with client centeredness. Similarly, the FIM self-care at admission score was predictive of satisfaction with clinical quality. Although the level of significance was below the typical .05 cutoff level, the variables regarding self-care were retained as important in the model building. The results are shown in Tables 4.8 and 4.9 with explanation following each table.

The logistic regression model tested the effects of four independent functional variables with client centeredness. The FIM self-care score at discharge was significant, meaning for each additional point of independence on this scale; clients were 1.042 times or 4.2% more likely to be satisfied on the client centeredness subscale, all other factors being equal.

Similarly, with the four independent variables entered into this logistic regression for clinical quality, for each additional point of independence on the FIM discharge

Table 4.8. FIM and FIM self-care: Predicting Satisfaction with Client Centeredness

|                                       | B      | SE   | Wald  | df | Sig. | Exp(B) | 95% C.I. for<br>EXP(B) |       |
|---------------------------------------|--------|------|-------|----|------|--------|------------------------|-------|
|                                       |        |      |       |    |      |        | Lower                  | Upper |
| FIM at admission<br>with no self-care | .018   | .013 | 1.836 | 1  | .175 | 1.018  | .992                   | 1.044 |
| FIM at discharge<br>with no self-care | .008   | .013 | .387  | 1  | .534 | 1.008  | .982                   | 1.035 |
| FIM self-care at<br>admission         | -.038  | .024 | 2.438 | 1  | .118 | .963   | .919                   | 1.010 |
| FIM self-care at<br>discharge         | .041   | .022 | 3.444 | 1  | .063 | 1.042  | .998                   | 1.089 |
| Constant                              | -1.132 | .368 | 9.472 | 1  | .002 | .322   |                        |       |

Table 4.9. FIM and FIM self-care: Predicting Satisfaction with Clinical Quality

|                                       | B     | SE   | Wald  | df | Sig. | Exp(B) | 95% C.I. for<br>EXP(B) |       |
|---------------------------------------|-------|------|-------|----|------|--------|------------------------|-------|
|                                       |       |      |       |    |      |        | Lower                  | Upper |
| FIM at admission<br>with no self-care | .008  | .014 | .305  | 1  | .581 | 1.008  | .980                   | 1.036 |
| FIM at discharge<br>with no self-care | .025  | .015 | 2.963 | 1  | .085 | 1.026  | .997                   | 1.055 |
| FIM self-care at<br>admission         | -.049 | .026 | 3.548 | 1  | .060 | .952   | .905                   | 1.002 |
| FIM self-care at<br>discharge         | .027  | .025 | 1.203 | 1  | .273 | 1.027  | .979                   | 1.078 |
| Constant                              | -.844 | .387 | 4.748 | 1  | .029 | .430   |                        |       |

scores with no self-care included, clients were 1.026 times or 2.6% more likely to be satisfied. For self-care FIM at admission scores, the odds ratio of .952 and the negative B value (-.049) suggests that for each point decrease in independence at admission in

self-care, clients were less likely to be satisfied on the clinical quality subscale, all other factors being equal. Alternatively stated, for each point increase of FIM self-care scores at admission, clients were 1.05 (1/.952) times or 5% more likely to report satisfaction, all other factors being equal.

**Research question 3: How does the client's medical status (e.g., how sick they are, medical complications) contribute to models of client satisfaction in rehabilitation?** Binary logistic regression was conducted to determine if a client's medical status as measured by diagnosis-type (e.g., neurological versus non-neurological), the level of severity (e.g., the participant's medical complexity), the number of co-morbid conditions and the pain ratings at admission and discharge predicted satisfaction on the dependent variables of client centeredness or clinical quality. There was no significant predictive relationship between the independent variables and satisfaction with clinical quality. For client-centeredness, the results of the logistic regression are displayed in Table 4.10.

The logistic regression model tested the effects of five independent variables on satisfaction with client centeredness. As shown in Table 4.10, one variable (neurological versus non-neurological) was significant in the predictive client centeredness subscale model. Clients with a neurological condition were 1.475 times or 48% more likely to be satisfied on aspects of client centeredness than those without a neurological condition.

Logistic regression controls for the effects of all the independent variables on the dependent variables. To explore this result more closely, additional analysis was performed to compare the groups with and without neurological disorders. The group with neurological disorders had less pain on admission (average of 4.1 versus 6.4 for the

Table 4.10. Medical Status: Predicting Likelihood of Satisfaction with Client Centeredness

|   | B     | SE   | Wald  | df | Sig. | Exp(B) | 95% C.I. for<br>EXP(B) |       |
|---|-------|------|-------|----|------|--------|------------------------|-------|
|   |       |      |       |    |      |        | Lower                  | Upper |
| Neurological ( <i>n</i> = 275) versus non-neurological conditions ( <i>n</i> = 366) | .389  | .194 | 4.027 | 1  | .045 | 1.475  | 1.009                  | 2.157 |
| Severity index  | .033  | .040 | .705  | 1  | .401 | 1.034  | .956                   | 1.118 |
| Total co-morbidities  | -.042 | .035 | 1.436 | 1  | .231 | .959   | .895                   | 1.027 |
| Pain at admission   | .012  | .028 | .171  | 1  | .679 | 1.012  | .957                   | 1.070 |
| Pain at discharge   | -.040 | .029 | 1.832 | 1  | .176 | .961   | .907                   | 1.018 |
| Constant  | .684  | .365 | 3.503 | 1  | .061 | 1.981  |                        |       |

non-neurological group) and discharge (average of 3.3 versus 4.6 for the non-neurological group), higher rates of severity (average ratings of 5.5 versus 3.3), and a higher number of co-morbidities (average of 8.0 versus 7.2). Thus, when controlling for these complicated conditions, the neurological group expressed significantly more satisfaction than the non-neurological group.

**Research question 4: How does variation in rehabilitation processes contribute to models of client satisfaction in rehabilitation?** Binary logistic regression was conducted to determine if a client's days from onset of disability to admission for rehabilitation, length of stay in rehabilitation, and total hours of rehabilitation therapy (e.g., sum of all hours of Occupational, Physical, and Speech Therapies) predicted

satisfaction on either client centeredness and/or clinical quality. Rehabilitation processes included one independent variable that significantly predicted satisfaction with client centeredness and with clinical quality. The results are displayed in Tables 4.11 and 4.12.

Table 4.11. Rehabilitation Processes: Predicting Likelihood of Satisfaction with Client-Centeredness

|  | B     | SE   | Wald  | df | Sig. | Exp(B) | 95% C.I. for<br>EXP(B) |       |
|--|-------|------|-------|----|------|--------|------------------------|-------|
|  |       |      |       |    |      |        | Lower                  | Upper |
| 1-8 days length of stay in RRH ( <i>n</i> = 189)   | -.443 | .482 | .841  | 1  | .359 | .642   | .250                   | 1.654 |
| 9-13 days length of stay in RRH ( <i>n</i> = 162)  | -.569 | .439 | 1.676 | 1  | .195 | .566   | .239                   | 1.339 |
| 14-20 days length of stay in RRH ( <i>n</i> = 147) | -.234 | .364 | .411  | 1  | .521 | .792   | .388                   | 1.617 |
| Total rehabilitation hours                         | .009  | .006 | 1.889 | 1  | .169 | 1.009  | .996                   | 1.021 |
| Admission in 15 days or less ( <i>n</i> = 479)     | -.673 | .244 | 7.587 | 1  | .006 | .510   | .316                   | .824  |
| Constant   | 1.332 | .718 | 3.439 | 1  | .064 | 3.790  |                        |       |

The logistic regression model tested the effects of three independent variables on satisfaction with client centeredness. Days from condition onset to RRH admission varied widely from 0 days to 55 years with 75% being admitted within 15 days of onset. Two categories were created and defined as 0-15 days and greater than 16 days from onset to admission for comparison. Length of stay also varied from 1 to 77 days and was divided into four quartile groups. As shown in Table 4.12, one variable was significant in

Table 4.12. Rehabilitation Processes: Predicting Likelihood of Satisfaction with Clinical Quality

|  | B     | SE   | Wald  | df | Sig. | Exp(B) | 95% C.I. for<br>EXP(B) |       |
|--|-------|------|-------|----|------|--------|------------------------|-------|
|  |       |      |       |    |      |        | Lower                  | Upper |
| 1-8 days length of stay in RRH ( <i>n</i> = 177)   | -.598 | .564 | 1.122 | 1  | .289 | .550   | .182                   | 1.662 |
| 9-13 days length of stay in RRH ( <i>n</i> = 155)  | -.342 | .484 | .499  | 1  | .480 | .711   | .275                   | 1.834 |
| 14-20 days length of stay in RRH ( <i>n</i> = 135) | -.217 | .382 | .307  | 1  | .579 | .805   | .373                   | 1.734 |
| Total rehabilitation hours                         | .016  | .009 | 3.177 | 1  | .075 | 1.016  | .998                   | 1.034 |
| Admission in 15 days or less ( <i>n</i> = 465)     | -.202 | .267 | .576  | 1  | .448 | .817   | .484                   | 1.377 |
| Constant   | 1.045 | .760 | 1.891 | 1  | .196 | 2.843  |                        |       |

the predictive satisfaction model. The odds ratio of .510 and the negative B value (-.673) suggests that participants who were not admitted within 15 days of disability onset were .51 times less likely to report satisfaction for the client-centeredness subscale of the predictive model. Alternatively stated, clients who were admitted with 15 days from onset were 1.96 times (nearly twice as likely) more likely to report satisfaction on the client-centeredness subscale. Additional analysis was conducted to examine the group of participants who were admitted in 15 days or less. Discharge status and ethnicity were not statistically significant. Gender was statistically significant ( $p = .000$ , males-36.8% and females-63.2%) as was type of diagnosis ( $p = .000$ , non-neurological-62.6% and

neurological-37.4%). There were no statistically significant differences in participants who were admitted within 15 days or less with respect to severity, total co-morbidities, or pain at admission or discharge.

The total number of rehabilitation hours was significant for clinical quality. The odds ratio for total rehabilitation hours is 1.016 indicating that for each additional hour of rehabilitation therapy, participants were more 1.6% more likely to be satisfied on the clinical quality subscale.

**Research question 5: How do the client's gains and discharge situation relate to models of satisfaction in rehabilitation?** Binary logistic regression was conducted to determine if a client's change in pain level from admission to discharge, the discharge location to home versus not home, and change in total FIM functional level from admission to discharge predicted satisfaction on the subscales of client centeredness and/or clinical quality. Significant results were obtained for both predictive models; the results are displayed in Tables 4.13 and 4.14. The explanation of findings follows both tables.

Table 4.13. Discharge Status and Gains: Predicting Satisfaction with Client Centeredness

|  | B     | SE   | Wald  | df | Sig. | Exp(B) | 95% C.I. for<br>EXP(B) |       |
|--|-------|------|-------|----|------|--------|------------------------|-------|
|  |       |      |       |    |      |        | Lower                  | Upper |
| Pain change during rehab.                                | -.019 | .026 | .570  | 1  | .450 | .981   | .933                   | 1.031 |
| Discharge home ( <i>n</i> = 549) or not ( <i>n</i> = 92) | -.325 | .251 | 1.674 | 1  | .196 | .723   | .442                   | 1.182 |
| Total change in FIM                                      | .012  | .006 | 3.627 | 1  | .057 | 1.012  | 1.000                  | 1.024 |
| Constant   | .282  | .223 | 1.592 | 1  | .207 | 1.325  |                        |       |



Table 4.14. Discharge Status and Gains: Predicting Satisfaction with Clinical Quality

|  | B     | SE   | Wald  | df | Sig. | Exp(B) | 95% C.I. for<br>EXP(B) |       |
|--|-------|------|-------|----|------|--------|------------------------|-------|
|  |       |      |       |    |      |        | Lower                  | Upper |
| Pain change during rehab.                                | -.010 | .027 | .126  | 1  | .723 | .990   | .939                   | 1.044 |
| Discharge home ( <i>n</i> = 534) or not ( <i>n</i> = 78) | -.085 | .277 | .094  | 1  | .759 | .919   | .534                   | 1.580 |
| Total change in FIM                                      | .021  | .007 | 9.650 | 1  | .002 | 1.022  | 1.008                  | 1.035 |
| Constant   | .179  | .238 | .563  | 1  | .453 | 1.196  |                        |       |

The logistic regression model tested the effects of three independent variables on satisfaction with client centeredness and clinical quality. For both subscales, the independent variable of change score in FIM from admission to discharge was a significant predictor of satisfaction. For the client centeredness subscale, for each one-point gain in FIM change score, clients were 1.012 times or 1.2% more likely to be satisfied on the client centeredness subscale, all other factors being equal. On the clinical quality subscale, similarly, for each one point gain in FIM change score meant that participants were 1.022 times or 2.2% more likely to be satisfied with clinical quality all other factors being equal.

**Research question 6: How do occupational therapy services contribute to models of satisfaction in rehabilitation?** Binary logistic regression was conducted to determine if a functional status score that would be specifically related to occupational therapy (e.g., self-care change score) coupled with total hours of occupational therapy services received would predict the dependent variable of satisfaction on either client

centeredness and/or clinical quality. FIM self-care change scores were significant predictors of satisfaction for both the client-centeredness and clinical quality subscale.

The results are displayed in Tables 4.15 and 4.16.

Table 4.15. OT Services: Predicting Satisfaction with Client Centeredness

|                      | B     | SE   | Wald   | df | Sig. | Exp(B) | 95% C.I. for<br>EXP(B) |       |
|----------------------|-------|------|--------|----|------|--------|------------------------|-------|
|                      |       |      |        |    |      |        | Lower                  | Upper |
| OT # session hours   | -.016 | .009 | 2.745  | 1  | .98  | .985   | .967                   | 1.003 |
| FIM self-care change | .052  | .015 | 12.561 | 1  | .000 | 1.053  | 1.023                  | 1.084 |
| Constant             | .218  | .215 | 1.028  | 1  | .311 | 1.244  |                        |       |

Table 4.16. OT Services: Predicting Satisfaction with Clinical Quality

|                      | B     | SE   | Wald   | df | Sig. | Exp(B) | 95% C.I. for<br>EXP(B) |       |
|----------------------|-------|------|--------|----|------|--------|------------------------|-------|
|                      |       |      |        |    |      |        | Lower                  | Upper |
| OT # session hours   | -.002 | .010 | .041   | 1  | .839 | .998   | .979                   | 1.018 |
| FIM self-care change | .057  | .016 | 13.054 | 1  | .000 | 1.059  | 1.027                  | 1.093 |
| Constant             | .173  | .237 | .531   | 1  | .466 | 1.188  |                        |       |

The logistic regression model tested the effects of two independent variables on satisfaction with client centeredness and clinical quality. For every one point gain in self-care independence as measured on the FIM, clients were 1.053 times or 5.3% more likely to be in the satisfied group on the client centeredness subscale. Similarly, for every one point increase in self-care independence as measured on the FIM, clients were 1.059 times or 6% more likely to fall into the satisfied group on the clinical quality subscale when controlling for the number of OT session hours, a non-significant predictor.

## **Summary and Synthesis**

This chapter presented two phases of analysis, the first a factor analysis of the satisfaction survey and the second analysis to answer the research questions. All of the items on the satisfaction with continuum of care (SCC) were retained and the overall instrument had good internal consistency (Cronbach's alpha at 0.097). Two subscales were derived from the SCC, the client centeredness and clinical quality subscales. Though both of these subscales had lower internal consistency (e.g., alpha coefficients of 0.91 and 0.83 respectively), both were kept to add conceptual richness to help define, explain, understand satisfaction as an outcome in the predictive model.

Most satisfaction survey instruments have high levels of satisfaction ratings with this study being no exception. Using the raw data set with no missing data replaced, the data were stratified into two levels: 100% satisfied and dissatisfied. Dissatisfied was defined as a rating of at least one item on the respective subscales as a '1' (strongly disagree), '2' (disagree), or '3' (neither agree nor disagree). This dichotomized rating of satisfied or dissatisfied on the client centeredness and clinical quality subscales was used as the dependent variable in a logistic regression model. Six research questions were addressed relating to the effects of client demographics; functional status at admission and discharge; medical status; rehabilitation processes; discharge location and gains in rehabilitation; and occupational therapy hours and self-care status and gains on subscales of satisfaction.

Several independent variables showed significant relationships to satisfaction on the client centeredness subscale. Being in an age group of 60-71 years of age, type of diagnosis (neurological versus non-neurological, admission in 15 days from onset to admission were all significant as were levels of function of the participants. Having a

higher self-care FIM score at discharge was significant. Similarly, clients who achieved higher changes in total FIM scores and self-care change scores from admission to discharge were more likely to be satisfied on aspects of client centeredness.

The pattern of predictors was similar for the clinical quality subscale regarding variations on functional FIM scores. Functional Independence Measure scores (FIM) at discharge with no self-care included (primarily motor and cognitive scores) were predictive of satisfaction as was total changes in FIM scores from admission to discharge. Self-care FIM scores at admission and total changes in FIM scores from admission to discharge were also predictive of satisfaction. These functional FIM scores coupled with total rehabilitation hours, also a predictor of satisfaction, were all significant with the clinical quality subscale. These relationships are displayed in Figures 4.1 and 4.2.

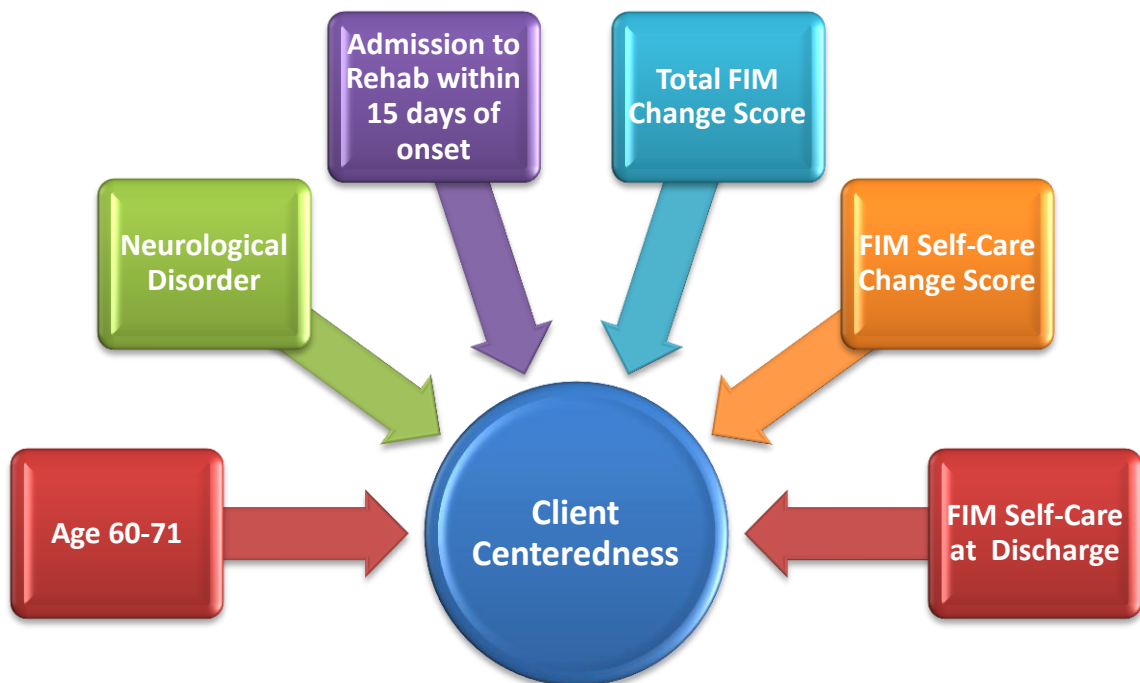


Figure 4.1. Predictors of satisfaction with client-centeredness.

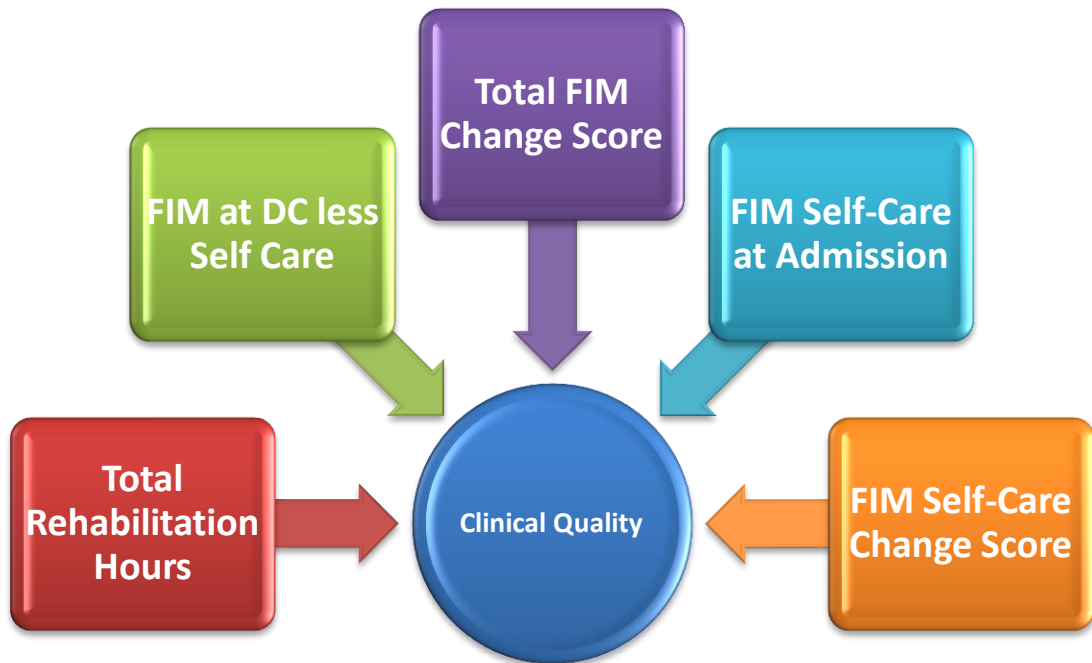


Figure 4.2. Predictors of satisfaction with clinical quality.

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## CHAPTER FIVE:

### DISCUSSION

This research was a non-experimental design using an existing data set in a descriptive and comparative study. The emphasis was to determine the best predictors of satisfaction in a rehabilitation continuum of care and develop a working logic model of satisfaction. In this chapter, the results of the study are discussed. This discussion includes: a discussion of findings related to the previous literature, strengths and limitations of the study, and suggestions for future research, and conclusions.

#### **Relationship of Findings to Previous Literature**

This research was a non-experimental design using an existing dataset in a descriptive and comparative study. Six research questions were answered that sought to determine the best predictors of satisfaction with a rehabilitation continuum of care and develop a working model of satisfaction. The predictor or independent variables, if significant, are discussed in relationship to previous research. The dependent or outcome variables of satisfaction were measured with two subscales of client centeredness and clinical quality.

In this study, the relationship of age, race and gender on measures of satisfaction were tested. Age, specifically the range of 60-71 years, was the only significant predictor of satisfaction on the client centeredness subscale of satisfaction. Adults ages 60-71 were 64% more times more likely to report satisfaction. Additional analysis showed no significant statistical difference for this age group with respect to type of diagnosis (neurological vs. non-neurological) or most other indicators. Demographics as predictors of satisfaction were often tested in previous literature with inconsistent results. Many authors (Hall & Dornan, 1990; Ingo, Lehnert-Batar, Schupp, Gerling, & Kladny, 2006;

Mancuso, et al., 2003; McKinnon, 2001; Thi, Briancon, Empereur, & Guillemin, 2002) tested the relationship of demographic variables such as age, gender and race to determine their predictive capacity for satisfaction. Similar to findings of this study, these authors found that older adults, specifically adults 60 and older, were more satisfied than other groups with gender and race having no significance predictive power. However, other authors such as Heinemann, Bode, Cichowski and Kan (1997) found that older age was not a predictor of satisfaction while other authors (Berges, Ottenbacher, Smith, Smith and Ostir, 2006; Pound, Tilling, Rudd, & Wolfe, 1999; Stiller, Cains, & Drury, 2009; Tooth et al., 2005) found that demographic variables (e.g., age, race, gender) were not predictors of higher levels of satisfaction. Ottenbacher, Gonzales, Smith, Illig, Fiedler, & Granger (2001) found that older subjects who were African American or Hispanic were more likely to be dissatisfied than younger subjects while age did not affect the degree of satisfaction with non-Hispanic white subjects. In the present study, none of the demographic variables were significant predictors of satisfaction with the clinical quality of care. Thus, satisfaction with rehabilitation may be influenced in part by age with older adults more satisfied, but other demographics seem independent of satisfaction.

The functional independence measure (FIM), as a measure of functional status in combination with other independent variables, was used in various forms (e.g., Total FIM scores at admission and discharge, change scores for FIM and self-care measures and FIM self-care scores at admission and discharge) in several research questions. The Total FIM score as a measure of functional status at admission and discharge in rehabilitation was of interest from an overall perspective of rehabilitation while FIM self-care status at

admission and discharge and change scores was of particular interest because FIM self-care is often attributed specifically to occupational therapy. Functional status was an important and robust predictor of satisfaction with both clinical quality and client centeredness but in slightly different ways. For the client centeredness subscale, the FIM self-care score at discharge was significant, meaning for every one point increase in FIM self-care scores (e.g., eating, bathing, toileting, dressing) at discharge, clients were 4.2% more likely to be satisfied on the client-centeredness subscale. This status at discharge may reflect the efforts of occupational therapy and persons achieving higher levels of functioning might attribute this to efforts focusing on personal and unique needs. As predictors of satisfaction with the clinical quality of rehabilitation, both the FIM score with no self-care at discharge and the FIM self-care score at admission were significant predictors. Although previous research did not address FIM self-care scores specifically at admission, discharge, or change scores, Ottenbacher et al., (2001) found that subsections of the FIM instrument (e.g., FIM D/C motor and cognitive) predicted patient satisfaction, similar to the findings in this study on FIM total scores at discharge (excluding self-care). Higher motor and cognitive scores at discharge (FIM at discharge with no self-care) and higher scores in functional self-care at admission were significant predictors of satisfaction in the clinical quality subscale. Clients admitted with higher scores, that is, higher levels of function in self-care were more likely to be satisfied. FIM self-care change scores and Total FIM change scores were significantly predictive of both satisfaction with clinical quality and client-centeredness. Other authors such as Mancuso et al., (2003) only considered the FIM motor score at discharge and found this to be a strong predictor of satisfaction; however, Heinemann et al., (1997) did not find a



relationship between functional status and satisfaction. Overall, Ottenbacher et al., (2001) found that patients who had higher FIM totals at discharge were more satisfied. Thus, functional status, change in functional status, and specifically self-care status and improvement in self-care status are important predictors of satisfaction with rehabilitation on aspects of clinical quality and client centeredness. These functional variables relate to the results that client's achieved and it does not seem surprising that client's who achieve better results are more likely to be satisfied.

Research question three examined the predictive relationship of clients' medical status on satisfaction and included a diagnosis of neurological versus non-neurological disorder, levels of severity, co-morbidities, and pain at admission and discharge. In the rehabilitation literature, most recipients of care were highly satisfied overall (Stiller, Cains, & Drury, 2009) regardless of whether the diagnosis was neurological (Ottenbacher et al., 2001; Reker et al., 2002;

Tooth et al., 2004) or non-neurological (Grisson & Dunagan, 2001; Hush, Cameron, & Mackey, 2011; Stiller et al., 2009). This present study found that clients with a neurological diagnosis were 48% more likely to be satisfied in the client centeredness subscale than those without a neurological disorder. Deeper analysis showed that the neurological group had higher levels of severity and co-morbidities. Pain ratings at admission or discharge, severity of medical conditions and co-morbidities were not significant predictors of satisfaction on either clinical quality or client-centeredness in this research. However, Bourne et al., (2010) found that increased pain and more complications than the primary diagnosis with a client resulted in less satisfaction. Heinemann, et al., (1997) found that level of severity of disability was

unrelated to satisfaction with care while Pound et al., (1999) found that those clients with more severity and co-morbidities were less likely to be satisfied. Thus, the findings are inconsistent and the definitions of the variables and the populations studied varied between these studies.

Some processes of rehabilitation (e.g., length of stay) were tested in previous studies; others such as time between onset to admission and total rehabilitation hours were not addressed. When length of stay (LOS) was addressed in the literature, the relationship to satisfaction was varied. Some authors (Mancuso et al., 2003; Ottenbacher et al., 2001) found that clients who experienced a longer LOS were less likely to be satisfied; others found that shorter LOS resulted in lower satisfaction (Tooth et al., 2004) or had no significance (Berges et al., 2006). For this research, LOS was not significant for either of the subscales of satisfaction. Onset of primary diagnosis to admission to RRH in 0-15 days was a significant predictor of satisfaction on the client-centeredness subscale. Clients who were admitted to RRH within 15 days from onset were nearly twice as likely to report being satisfied on the client-centeredness subscale. There were no significant differences in levels of severity, co-morbidities, or pain at admission and discharge for this group. This particular variable was not addressed in the literature except by Grisson and Dunagan (2001) who found that by decreasing time to initiate therapy from acute care to the rehabilitation unit, satisfaction was increased. Thus there is some support by this study and previous studies that quick access to rehabilitation after disability onset is an important predictor of satisfaction.

Total rehabilitation hours were a significant predictor of satisfaction on the client-centeredness subscale. For each additional hour of rehabilitation, clients were 1.6% more

likely to be satisfied on the clinical quality subscale. Hush, Cameron, and Mackey, (2011) found that recipients of physical therapy were highly satisfied overall with their care but did not address hours of therapy received as a determinant of satisfaction. However, these authors found that continuity of care were also consistent with higher levels of satisfaction. It could be argued that consistence of care is a similar construct to total rehabilitation hours and translates into a client's perception of high quality clinical services.

There was not a consensus in the literature regarding discharge location and satisfaction. Mancuso et al., (2003) found that persons who were discharged home were significantly less likely to be dissatisfied than those discharged to other locations. Ottenbacher et al., (2001) found that discharge setting was not significant as a predictor of satisfaction. Discharge location, on either subscale in this study, was not a significant predictor of satisfaction nor was a client's change in pain. Pain changes were addressed by Bourne, Chesworth, Davis, Mahomed, Charron, (2010) and Cohen (1996) who found that increased pain resulted in less satisfaction.

For the final research question, the intent was to directly use the FIM component most affiliated with occupational therapy, the self-care portion of the FIM and also the total hours of occupational therapy to determine if they were predictors of satisfaction for the subscales of satisfaction. In many of the rehabilitation-related studies presented in Chapter 2, (Beattie et al., 2002; Hush, Cameron, & Mackey, 2011; McKinnon, 2001; Stiller et al., 2009), the interpersonal attributes of the therapists, including physical and occupational therapists were attributed more to satisfaction than function. Huebner, Johnson, Bennett, and Schneck (2003) found that satisfaction with occupational therapy

was generally high, but unrelated to most functional outcomes. For this research question, the total hours of occupational therapy was not a significant predictor of satisfaction while the amount of change in self-care from admission to discharge was significant for both satisfaction subscales.

There were differences (e.g., age, diagnosis category, rehabilitation hours) and similarities (function) on each of the subscales of satisfaction. Independent or predictor variables specific to the client centeredness subscale were older adults, ages 60-71, having a neurological-type of diagnosis, and being admitted within 15 days from onset to admission. One predictor variable, total rehabilitation hours, was specific to the clinical quality satisfaction subscale. However, client's functional status, whether it was admission or discharge, whether status occurred or changed during rehabilitation, or concerned specific parts of the FIM was a significant predictor of satisfaction for both clinical quality and client centeredness.

Regarding the original working model presented in chapter 3, functional status and gains in functional status were the most robust and consistent predictors of satisfaction with rehabilitation. Each of the other anticipated predictors of satisfaction had at least one variable that significantly predicted satisfaction in this study, but also many variables that were unrelated to satisfaction in this study. Previous research also found spotty and inconsistent results on many of these variables. Figure 5.1 displays the specific variables associated with overall satisfaction and support the notion that aspects of these variables all contribute to satisfaction.

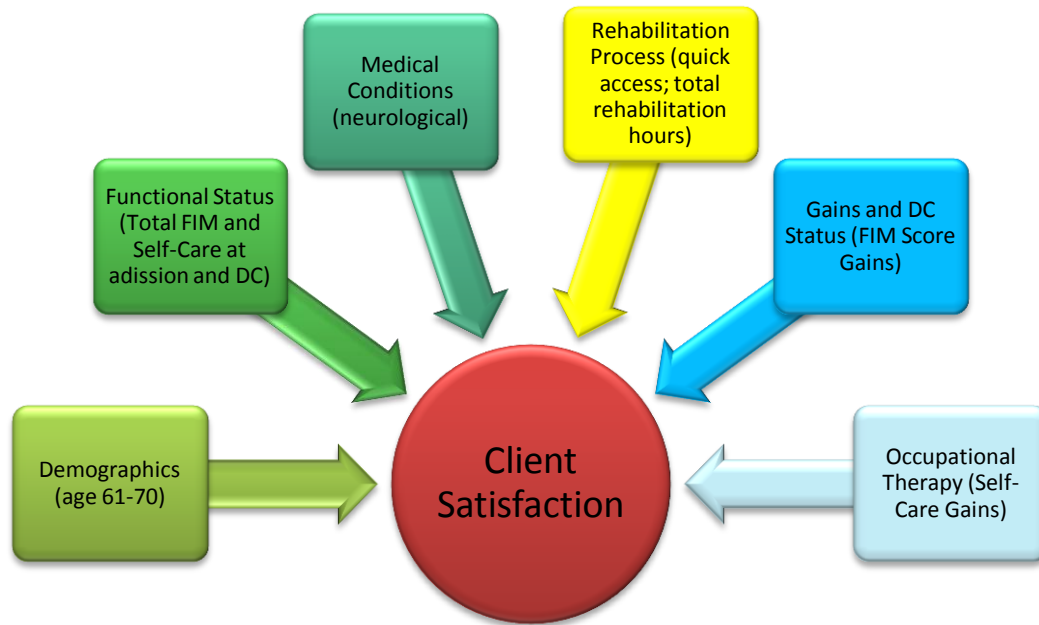


Figure 5.1. Revised overall model of predictors of satisfaction.

### Implications for Practice

Although the age group of 60-71 years was found to be more satisfied in this study, there are proactive opportunities to improve satisfaction levels for all age groups. For example, Grissom and Dunagan, (2001) suggests that clients be educated about the rehabilitation process because they come in unsure of the process. Such education would include the collaborative process with therapists, having a dialogue about the process and outcomes of therapy, and their part in achieving results. Rehabilitation is a process of working with therapists rather than having something done for the client.

One of the most robust findings of this study was the impact of improved functional status on satisfaction outcomes. This has enormous implications for practice. It is important to focus maximum efforts and provide clients with the most potent interventions possible, to track changes in their functional status with them, and to reinforce the worth of their gains. These functional related activities will likely improve client

satisfaction more than a focus on demographics or other indicators external to rehabilitation. Some client groups such as those with longer delays in entering rehabilitation, those with orthopedic disorders or persons with short stays may require special attention to engage them in the rehabilitation process. Although the results of this study do not suggest specific strategies, practitioners might take extra effort to ensure that these clients feel well cared for and helped.

Self-care FIM scores are often attributable to Occupational Therapy services when the FIM instrument is used. These scores were significant to satisfaction in this study, reinforcing the importance and contribution of Occupational Therapy intervention in this area.

### **Strengths and Limitations**

In an ideal study, the participants would be a homogeneous sample assigned to two or more conditions using a randomized control trial to achieve the most statistical power and control for the many confounding variables that would influence satisfaction. This study was a naturalistic and applied study with a wide range of clients. Consequently, one cannot conclude for example that improvements in self-care function caused the client to be more satisfied with both clinical quality and client-centered aspects of care. Nor can it be concluded that rehabilitation caused the changes; client's natural healing could result in improved function.

This study included a heterogeneous group of participants but was fairly typical or representative sample of an inpatient rehabilitation population. This study sought to develop a client-centered outcome measure of satisfaction and develop a working model of predictors of satisfaction to inform practice and address pertinent areas in rehabilitation and occupational therapy. Previous research also was conducted in typical

rehabilitation settings. Because of potentially wide variation in the composition of such populations, it is not surprising that some demographic variables or rehabilitation process variables were inconsistent predictors of satisfaction.

The scores from the SCC and the application of this measure in this study provided interesting information; this measure was reliable and completed by a wide range of clients. The results of this study add support to the construct validity of the SCC since subscales of the SCC were predicted by functional status and change in functional status as might be theoretically expected in rehabilitation. The version used in this study offers an option of an appropriate instrument for measuring overall satisfaction or at least two domains of the IOM model. The scores from the SCC could be considered a uni-dimensional scale in terms of satisfaction, but the use of two subscales added conceptual richness to this study. The SCC could be applicable to a wide range of inpatient and perhaps outpatient rehabilitation settings.

Satisfaction however, is a tricky outcome measure because it is not as tangible as other outcome measures such as FIM change scores. By dividing it into two subscales with lower levels of reliability (but still strong) than the overall scale, it could be considered a weakness from a reliability viewpoint but a strength from a perspective of describing and defining satisfaction. Having two subscales provided a means to say that some questions were more a measure of satisfaction with the client centered aspects of care, thus more related to occupational therapy and consistent with the professions' stated values. The second subscale as a measure of satisfaction with the clinical quality of care was more process oriented, that is, it measured how things got done in rehabilitation process. However, only number of rehabilitation hours (a rehabilitation process

independent variable) was actually predictive of satisfaction with the clinical quality of rehabilitation.

A strength of this study was the stratification of the sample to define satisfaction and dissatisfaction in discrete ways that possibly produced more homogeneous groups. Defining and stratifying the 100% satisfied group was relatively easy and incorporated about 1/3 of the participants. Defining and stratifying the data for dissatisfaction was much more conceptually challenging and limited the total number of respondents. By stratifying the data from the SCC in this way, about a third of the responses were not used in the analysis. In fact, there was a third group of individuals who were neither 100% satisfied nor expressed any dissatisfaction that were excluded from this study in order to address the research questions. This stratification reduced the sample size in some cells especially in the dissatisfied category that may have reduced the model fit in some instances. Nonetheless, this study included a relatively large sample size in both satisfied and dissatisfied group. Future research could examine the third group of clients excluded from this present study.

Another limitation to this study arises from the challenge of isolating the effects of occupational therapy from a study in which participants are receiving services from multiple providers. The use of the self-care portion of the FIM as well as using total occupational therapy hours was designed to help isolate these effects, but no significance was found. In this study, FIM Self-Care Change scores were significant predictors of satisfaction on both client centeredness and clinical quality. Although this relationship cannot be attributed to the intervention of occupational therapy, this finding reinforces



the notion that self-care functioning is important to clients and that occupational therapy's efforts to improve self-care are valued.

The use of logistic regression as a technique to predict satisfaction was the correct statistical design and was useful in testing the research questions. This technique is appropriate with model testing with a dichotomous dependent variables and continuous and categorical independent variables. In this study, a level of statistical significance at the .10 level was used to include concepts of interest in the model building. As Tabachnick and Fidell (1996) state, "The logic of assessing strength of association is different in routine statistical hypothesis testing from situations where models are being evaluated" (p. 578). They suggest that model building is a conceptual task where reporting findings that would otherwise be non-significant is appropriate. In this study, the effects of multiple variables were tested. With multiple variables it is more likely that some relationships would be significant by chance. In testing hypothesis in typical comparative research, the alpha level suggesting significance is often adjusted to account for multiple comparisons. This was not done in this study due to the model building goal, but does suggest that some relationships could be found by chance. Finally, logistic regression tests the impact of variables on the dependent measure by controlling for the effects of the other variables. If the variables were grouped differently, then the results might have been different. Future researchers might test other research questions.

### **Future Research**

The results in the study were consistent with some of the results found in the previous research literature and inconsistent with others. Although the measurement of satisfaction has become more prevalent in rehabilitation, there remains more work and research to be done to add to this body of literature. A significant limitation to the

current research line is the comparison of satisfaction with multiple measures within potentially different settings with varying homogeneity of participants. It could be that the assumption that all rehabilitation clients are the same is erroneous. In the future, the use of cluster analysis might help identify underlying patterns among rehabilitation populations. Cluster analysis is like factor analysis but groups the row variables together rather than the columns. Using cluster analysis, more homogeneous sub groups of rehabilitation clients could be compared; these groups might be formed on the basis of age, severity, co-morbidities, functional status, or time since onset. There was no research found that sought first to identify subgroups of the larger population and then compare subgroups on levels of satisfaction.

This study was a partnership involving occupational therapy and a rehabilitation hospital in developing an outcome measure that was used or could be used in other healthcare systems. More studies need to be framed in such a way that items specific to occupational therapy could be isolated; there is also a need to demonstrate outcomes and link these to occupational therapy and other rehabilitation disciplines to continue to identify best practices and contribute to the rehabilitation literature.

The working model developed in this research study could be tested to determine predictors of satisfaction to provide additional information about variables that can support a client-centered practice. Much of the satisfaction literature, particularly in rehabilitation suggests that interpersonal attributes of providers, particularly therapists, are often more important than functional outcomes and it would be interesting to capture and measure more of the interpersonal aspects on a measure of satisfaction.

## **Conclusions**

This study was developed to develop a predictive model of two subscales of satisfaction. Some of the results aligned with the literature that sometimes demographic variables such as age are significant predictors and sometimes they are not. Specific to this study, significant predictors of satisfaction were having a neurological disorder, total rehabilitation hours, and early admission from onset to a rehabilitation facility. Quite significant in terms of satisfaction in this study were different aspects of function as measured by the Functional Independence Measure, which basically signified that the higher the functional status at any point in time, the higher the level of satisfaction.

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## APPENDIX A

### COVER LETTER QUALITY MANAGER

Date

«FIRSTNAME» «lastname»  
«NEXTOFKINFNAME» «NEXTOFKINLNNAME»  
«LINE1» «LINE2»  
«CITY», «STATE» «POSTCODE»

Dear Cardinal Hill Client:

Our staff strives to deliver consistent, high quality care to all clients. We would appreciate your time in completing our questionnaire about your experience with the Cardinal Hill Healthcare System. Your responses are confidential. They will be used to determine how well the services provided met your needs; and help to identify any improvement needed with those services.

In an attempt to adhere to feedback given from our clients, we are mailing surveys every three months. We are very interested in your opinion of our facility. If you received Home Health services from Cardinal Hill you may also receive an additional survey from Press Ganey. Press Ganey is a company that Cardinal Hill is using to help mail out surveys to evaluate care.

Please feel free to comment about this process of surveying. Our goal is to continue to deliver consistent, high quality care to all clients. Your input helps to evaluate the programs and services that we provide to ensure this occurs.

Your time in assisting us gather this important information is greatly appreciated.

Thank you,

Lisa Tudor, MBA  
Quality Management

*\*\*We ask that you please notify us of any address changes.\*\**

## APPENDIX B

### SATISFACTION WITH CONTINUUM OF CARE

# CARDINAL HILL<sup>®</sup> HEALTHCARE SYSTEM

Thank you for allowing us to serve you during your recent visit at Cardinal Hill Healthcare System.

We are committed to constantly improving the quality of service programs you receive. To help us meet our goal, please take a minute to rate us in several areas.

Overall, how you evaluate the health care within Cardinal Hill Healthcare System?

- ☐ Excellent
 ☐ Good
 ☐ Poor
   
☐ Very Good
 ☐ Fair

| MCID |                          |                          |                          |                          |
|------|--------------------------|--------------------------|--------------------------|--------------------------|
| 0    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

In comparing our service programs to those available elsewhere, how would you rate us on the following:

|   | Strongly Agree           | Agree                    | Neither Agree or Disagree | Disagree                 | Strongly Disagree        |
|---|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
| I felt good about the quality of my care.                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| The quality of my care did not change from person to person.                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| I felt confident in the skills of those who helped me.                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| Staff taught me how to be safe  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| The staff who helped me told me what they were doing and why they were doing it | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |

Please indicate your level of satisfaction with our healthcare system in the following areas:

|   | Strongly Agree           | Agree                    | Neither Agree or Disagree | Disagree                 | Strongly Disagree        |
|---|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
| I was involved in making decisions about my care with the help of the staff | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| What I thought seemed to matter to the staff                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| I was able to ask questions   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| I was not asked to do anything I felt was not helping me                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| I played an active part in my care  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| I was treated with respect  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| If I had pain, it seemed that the staff tried to help me                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |

Q3 2010

Please turn page for more questions

**Coordination of Care**

|   | Strongly Agree           | Agree                    | Neither Agree or Disagree | Disagree                 | Strongly Disagree        |
|---|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
| The staff worked together to help me                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| Staff seemed to care about me and my needs                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| The staff seemed to be in touch with each other about my care | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |

**Timeliness**

|  | Strongly Agree           | Agree                    | Neither Agree or Disagree | Disagree                 | Strongly Disagree        |
|--|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
| If I had to wait for something, it was not very long | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| My care took place in a timely and efficient manner  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| I was kept informed of delays                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| I felt the staff spent time with me                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |

**Outcomes**

|   | Strongly Agree           | Agree                    | Neither Agree or Disagree | Disagree                 | Strongly Disagree        |
|---|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
| While here, I have been helped to get better                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| If I needed help again, I would come back to Cardinal Hill                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| I would recommend Cardinal Hill to other people                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| (If discharged): The instructions that I received at discharge were clear to me | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |

**Comment:**

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Please let us know if you would like to be added to the Cardinal Hill Today mailing list?

☐ Yes

☐ No

# APPENDIX C

## IRF-PAI

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
CENTERS FOR MEDICARE & MEDICAID SERVICES

Form Approved  
OMB No. 0938-0842

### INPATIENT REHABILITATION FACILITY – PATIENT ASSESSMENT INSTRUMENT

| Identification Information*   | Payer Information*   |
|---|--|
| <p>1. Facility Information<br/>A. Facility Name _____</p> <p>B. Facility Medicare Provider Number _____</p> <p>2. Patient Medicare Number _____</p> <p>3. Patient Medicaid Number _____</p> <p>4. Patient First Name _____</p> <p>5A. Patient Last Name _____</p> <p>5B. Patient Identification Number _____</p> <p>6. Birth Date _____<br/>MM / DD / YYYY</p> <p>7. Social Security Number _____</p> <p>8. Gender (1 - Male; 2 - Female) _____</p> <p>9. Race/Ethnicity (Check all that apply)<br/>           American Indian or Alaska Native A. _____<br/>           Asian B. _____<br/>           Black or African American C. _____<br/>           Hispanic or Latino D. _____<br/>           Native Hawaiian or Other Pacific Islander E. _____<br/>           White F. _____</p> <p>10. Marital Status _____<br/>           (1 - Never Married; 2 - Married; 3 - Widowed;<br/>           4 - Separated; 5 - Divorced)</p> <p>11. Zip Code of Patient's Pre-Hospital Residence _____</p>  | <p>20. Payment Source<br/>A. Primary Source _____</p> <p>B. Secondary Source _____</p> <p>(01 - Blue Cross; 02 - Medicare non-MCO;<br/>           03 - Medicaid non-MCO; 04 - Commercial Insurance;<br/>           05 - MCO HMO; 06 - Workers' Compensation;<br/>           07 - Crippled Children's Services; 08 - Developmental<br/>           Disabilities Services; 09 - State Vocational Rehabilitation;<br/>           10 - Private Pay; 11 - Employee Courtesy;<br/>           12 - Unreimbursed; 13 - CHAMPUS; 14 - Other;<br/>           15 - None; 16 - No-Fault Auto Insurance;<br/>           51 - Medicare MCO; 52 - Medicaid MCO)</p>  |
| Medical Information*  |  |
| <p>12. Admission Date _____<br/>MM / DD / YYYY</p> <p>13. Assessment Reference Date _____<br/>MM / DD / YYYY</p> <p>14. Admission Class _____<br/>           (1 - Initial Rehab; 2 - Evaluation; 3 - Readmission;<br/>           4 - Unplanned Discharge; 5 - Continuing Rehabilitation)</p> <p>15. Admit From _____<br/>           (01 - Home; 02 - Board &amp; Care; 03 - Transitional Living;<br/>           04 - Intermediate Care; 05 - Skilled Nursing Facility;<br/>           06 - Acute Unit of Own Facility; 07 - Acute Unit of Another<br/>           Facility; 08 - Chronic Hospital; 09 - Rehabilitation Facility;<br/>           10 - Other; 12 - Alternate Level of Care Unit; 13 - Subacute<br/>           Setting; 14 - Assisted Living Residence)</p> <p>16. Pre-Hospital Living Setting _____<br/>           (Use codes from item 15 above)</p> <p>17. Pre-Hospital Living With _____<br/>           (Code only if item 16 is 01 - Home;<br/>           Code using 1 - Alone; 2 - Family/Relatives;<br/>           3 - Friends; 4 - Attendant; 5 - Other)</p> <p>18. Pre-Hospital Vocational Category _____<br/>           (1 - Employed; 2 - Sheltered; 3 - Student;<br/>           4 - Homemaker; 5 - Not Working; 6 - Retired for<br/>           Age; 7 - Retired for Disability)</p> <p>19. Pre-Hospital Vocational Effort _____<br/>           (Code only if item 18 is coded 1 - 4; Code using<br/>           1 - Full-time; 2 - Part-time; 3 - Adjusted Workload)</p> | <p>21. Impairment Group _____<br/>           Admission Discharge<br/>           Condition requiring admission to rehabilitation; code<br/>           according to Appendix A, attached.</p> <p>22. Etiologic Diagnosis _____<br/>           (Use an ICD-9-CM code to indicate the etiologic problem<br/>           that led to the condition for which the patient is receiving<br/>           rehabilitation)</p> <p>23. Date of Onset of Impairment _____<br/>           MM / DD / YYYY</p> <p>24. Comorbid Conditions; Use ICD-9-CM codes to enter up to<br/>           ten medical conditions</p> <p>A. _____ B. _____<br/>           C. _____ D. _____<br/>           E. _____ F. _____<br/>           G. _____ H. _____<br/>           I. _____ J. _____</p> |
| Medical Needs   |  |
| <p>25. Is patient comatose at admission? _____<br/>           0 - No, 1 - Yes</p> <p>26. Is patient delirious at admission? _____<br/>           0 - No, 1 - Yes</p> <p>27. Swallowing Status _____<br/>           Admission Discharge</p> <p>3 - <u>Regular Food</u>: solids and liquids swallowed safely<br/>           without supervision or modified food consistency</p> <p>2 - <u>Modified Food Consistency/ Supervision</u>: subject<br/>           requires modified food consistency and/or needs<br/>           supervision for safety</p> <p>1 - <u>Tube /Parenteral Feeding</u>: tube / parenteral feeding<br/>           used wholly or partially as a means of sustenance</p> <p>28. Clinical signs of dehydration _____<br/>           Admission Discharge</p> <p>(Code 0 - No; 1 - Yes) e.g., evidence of oliguria, dry<br/>           skin, orthostatic hypotension, somnolence, agitation</p>  | <p>*The FIM data set, measurement scale and impairment<br/>           codes incorporated or referenced herein are the property of<br/>           U B Foundation Activities, Inc. ©1993, 2001 U B Foundation<br/>           Activities, Inc. The FIM mark is owned by UBFA, Inc.</p>  |

## INPATIENT REHABILITATION FACILITY – PATIENT ASSESSMENT INSTRUMENT

| Function Modifiers*   |                     | 39. FIM™ Instrument*     |                          |      |
|---|---------------------|--------------------------|--------------------------|------|
| Complete the following specific functional items prior to scoring the FIM™ Instrument:  |                     | ADMISSION                | DISCHARGE                | GOAL |
| 29. Bladder Level of Assistance<br>(Score using FIM Levels 1 - 7)   | ADMISSION DISCHARGE | <input type="checkbox"/> | <input type="checkbox"/> |      |
| 30. Bladder Frequency of Accidents<br>(Score as below)  | ADMISSION DISCHARGE | <input type="checkbox"/> | <input type="checkbox"/> |      |
| 7 - No accidents<br>6 - No accidents; uses device such as a catheter<br>5 - One accident in the past 7 days<br>4 - Two accidents in the past 7 days<br>3 - Three accidents in the past 7 days<br>2 - Four accidents in the past 7 days<br>1 - Five or more accidents in the past 7 days |                     |                          |                          |      |
| Enter in Item 39G (Bladder) the lower (more dependent) score from Items 29 and 30 above.  |                     |                          |                          |      |
| 31. Bowel Level of Assistance<br>(Score using FIM Levels 1 - 7)   | ADMISSION DISCHARGE | <input type="checkbox"/> | <input type="checkbox"/> |      |
| 32. Bowel Frequency of Accidents<br>(Score as below)  | ADMISSION DISCHARGE | <input type="checkbox"/> | <input type="checkbox"/> |      |
| 7 - No accidents<br>6 - No accidents; uses device such as an ostomy<br>5 - One accident in the past 7 days<br>4 - Two accidents in the past 7 days<br>3 - Three accidents in the past 7 days<br>2 - Four accidents in the past 7 days<br>1 - Five or more accidents in the past 7 days  |                     |                          |                          |      |
| Enter in Item 39H (Bowel) the lower (more dependent) score of Items 31 and 32 above.  |                     |                          |                          |      |
| 33. Tub Transfer  | ADMISSION DISCHARGE | <input type="checkbox"/> | <input type="checkbox"/> |      |
| 34. Shower Transfer   | ADMISSION DISCHARGE | <input type="checkbox"/> | <input type="checkbox"/> |      |
| (Score Items 33 and 34 using FIM Levels 1 - 7; use 0 if activity does not occur) See training manual for scoring of Item 39K (Tub/Shower Transfer)  |                     |                          |                          |      |
| 35. Distance Walked   | ADMISSION DISCHARGE | <input type="checkbox"/> | <input type="checkbox"/> |      |
| 36. Distance Traveled in Wheelchair   | ADMISSION DISCHARGE | <input type="checkbox"/> | <input type="checkbox"/> |      |
| (Code items 35 and 36 using: 3 - 150 feet; 2 - 50 to 149 feet; 1 - Less than 50 feet; 0 - activity does not occur)  |                     |                          |                          |      |
| 37. Walk  | ADMISSION DISCHARGE | <input type="checkbox"/> | <input type="checkbox"/> |      |
| 38. Wheelchair  | ADMISSION DISCHARGE | <input type="checkbox"/> | <input type="checkbox"/> |      |
| (Score Items 37 and 38 using FIM Levels 1 - 7; 0 if activity does not occur) See training manual for scoring of Item 39L (Walk/Wheelchair)  |                     |                          |                          |      |
| *The FIM data set, measurement scale and impairment codes incorporated or referenced herein are the property of U B Foundation Activities, Inc. ©1993, 2001 U B Foundation Activities, Inc. The FIM mark is owned by UBFA, Inc.   |                     |                          |                          |      |

| 39. FIM™ Instrument*  |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|
|   | ADMISSION                | DISCHARGE                | GOAL                     |
| <b>SELF-CARE</b>  |                          |                          |                          |
| A. Eating   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| B. Grooming   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| C. Bathing  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| D. Dressing - Upper   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| E. Dressing - Lower   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| F. Toileting  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>SPHINCTER CONTROL</b>  |                          |                          |                          |
| G. Bladder  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| H. Bowel  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>TRANSFERS</b>  |                          |                          |                          |
| I. Bed, Chair, Wheelchair   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| J. Toilet   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| K. Tub, Shower  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>LOCOMOTION</b>   |                          |                          |                          |
| L. Walk/Wheelchair  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| M. Stairs   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>COMMUNICATION</b>  |                          |                          |                          |
| N. Comprehension  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| O. Expression   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>SOCIAL COGNITION</b>   |                          |                          |                          |
| P. Social Interaction   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Q. Problem Solving  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| R. Memory   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>FIM LEVELS</b><br>No Helper<br>7 Complete Independence (Timely, Safely)<br>6 Modified Independence (Device)<br>Helper - Modified Dependence<br>5 Supervision (Subject = 100%)<br>4 Minimal Assistance (Subject = 75% or more)<br>3 Moderate Assistance (Subject = 50% or more)<br>Helper - Complete Dependence<br>2 Maximal Assistance (Subject = 25% or more)<br>1 Total Assistance (Subject less than 25%)<br>0 Activity does not occur; Use this code only at admission |                          |                          |                          |



## INPATIENT REHABILITATION FACILITY – PATIENT ASSESSMENT INSTRUMENT

| Discharge Information*  |  | Quality Indicators |           |           |                                       |       |       |                                 |       |               |  |       |       |  |  |  |  |  |  |  |  |  |       |      |  |  |  |  |          |  |  |  |  |               |
|---|--|--------------------|-----------|-----------|---------------------------------------|-------|-------|---------------------------------|-------|---------------|--|-------|-------|--|--|--|--|--|--|--|--|--|-------|------|--|--|--|--|----------|--|--|--|--|---------------|
| <p>40. Discharge Date <span style="float: right;">MM / DD / YYYY</span></p> <p>41. Patient discharged against medical advice? <span style="float: right;">(0 - No, 1 - Yes)</span></p> <p>42. Program Interruption(s) <span style="float: right;">(0 - No; 1 - Yes)</span></p> <p>43. Program Interruption Dates<br/>(Code only if Item 42 is 1 - Yes)</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>A. 1<sup>st</sup> Interruption Date<br/><span style="border: 1px solid black; display: inline-block; width: 100px; height: 20px; margin-top: 5px;"></span><br/>MM / DD / YYYY</p> <p>C. 2<sup>nd</sup> Interruption Date<br/><span style="border: 1px solid black; display: inline-block; width: 100px; height: 20px; margin-top: 5px;"></span><br/>MM / DD / YYYY</p> <p>E. 3<sup>rd</sup> Interruption Date<br/><span style="border: 1px solid black; display: inline-block; width: 100px; height: 20px; margin-top: 5px;"></span><br/>MM / DD / YYYY</p> </div> <div style="width: 45%;"> <p>B. 1<sup>st</sup> Return Date<br/><span style="border: 1px solid black; display: inline-block; width: 100px; height: 20px; margin-top: 5px;"></span><br/>MM / DD / YYYY</p> <p>D. 2<sup>nd</sup> Return Date<br/><span style="border: 1px solid black; display: inline-block; width: 100px; height: 20px; margin-top: 5px;"></span><br/>MM / DD / YYYY</p> <p>F. 3<sup>rd</sup> Return Date<br/><span style="border: 1px solid black; display: inline-block; width: 100px; height: 20px; margin-top: 5px;"></span><br/>MM / DD / YYYY</p> </div> </div> <p>44A. Discharge to Living Setting<br/>(01 - Home; 02 - Board and Care; 03 - Transitional Living; 04 - Intermediate Care; 05 - Skilled Nursing Facility; 06 - Acute Unit of Own Facility; 07 - Acute Unit of Another Facility; 08 - Chronic Hospital; 09 - Rehabilitation Facility; 10 - Other; 11 - Died; 12 - Alternate Level of Care Unit; 13 - Subacute Setting; 14 - Assisted Living Residence)</p> <p>44B. Was patient discharged with Home Health Services?<br/>(0 - No; 1 - Yes)<br/>(Code only if Item 44A is 01 - Home, 02 - Board and Care, 03 - Transitional Living, or 14 - Assisted Living Residence)</p> <p>45. Discharge to Living With<br/>(Code only if Item 44A is 01 - Home; Code using 1 - Alone; 2 - Family / Relatives; 3 - Friends; 4 - Attendant; 5 - Other)</p> <p>46. Diagnosis for Interruption or Death<br/>(Code using ICD-9-CM code)</p> <p>47. Complications during rehabilitation stay<br/>(Use ICD-9-CM codes to specify up to six conditions that began with this rehabilitation stay)</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>A. _____</p> <p>C. _____</p> <p>E. _____</p> </div> <div style="width: 45%;"> <p>B. _____</p> <p>D. _____</p> <p>F. _____</p> </div> </div> | <p><b>PAIN</b></p> <p>51. Rate the highest level of pain reported by the patient within the assessment period:<br/>Admission: _____ Discharge: _____</p> <p>(Score using the scale below; report whole numbers only)</p> <table style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td style="width: 10%;">0</td><td style="width: 10%;">1</td><td style="width: 10%;">2</td><td style="width: 10%;">3</td><td style="width: 10%;">4</td><td style="width: 10%;">5</td><td style="width: 10%;">6</td><td style="width: 10%;">7</td><td style="width: 10%;">8</td><td style="width: 10%;">9</td><td style="width: 10%;">10</td> </tr> <tr> <td>No</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Worst</td> </tr> <tr> <td>Pain</td><td></td><td></td><td></td><td></td><td>Moderate</td><td></td><td></td><td></td><td></td><td>Possible Pain</td> </tr> </table> <p><b>Pressure Ulcers</b></p> <p>52A. Highest current pressure ulcer stage<br/>Admission: _____ Discharge: _____</p> <p>(0 - No pressure ulcer; 1 - Any area of persistent skin redness (Stage 1); 2 - Partial loss of skin layers (Stage 2); 3 - Deep craters in the skin (Stage 3); 4 - Breaks in skin exposing muscle or bone (Stage 4); 5 - Not stageable (necrotic eschar predominant; no prior staging available))</p> <p>52B. Number of current pressure ulcers<br/>Admission: _____ Discharge: _____</p> <p><b>PUSH Tool v. 3.0 ©</b></p> <p>SELECT THE CURRENT LARGEST PRESSURE ULCER TO CODE THE FOLLOWING. Calculate three components (C through E) and code total score in F.</p> <p>52C. Length multiplied by width (open wound surface area)<br/>Admission: _____ Discharge: _____</p> <p>(Score as 0 - 0 cm<sup>2</sup>; 1 - &lt; 0.3 cm<sup>2</sup>; 2 - 0.3 to 0.6 cm<sup>2</sup>; 3 - 0.7 to 1.0 cm<sup>2</sup>; 4 - 1.1 to 2.0 cm<sup>2</sup>; 5 - 2.1 to 3.0 cm<sup>2</sup>; 6 - 3.1 to 4.0 cm<sup>2</sup>; 7 - 4.1 to 8.0 cm<sup>2</sup>; 8 - 8.1 to 12.0 cm<sup>2</sup>; 9 - 12.1 to 24.0 cm<sup>2</sup>; 10 - &gt; 24 cm<sup>2</sup>)</p> <p>52D. Exudate amount<br/>Admission: _____ Discharge: _____</p> <p>0 - None; 1 - Light; 2 - Moderate; 3 - Heavy</p> <p>52E. Tissue type<br/>Admission: _____ Discharge: _____</p> <p>0 - Closed/resurfaced: The wound is completely covered with epithelium (new skin); 1 - Epithelial tissue: For superficial ulcers, new pink or shiny tissue (skin) that grows in from the edges or as islands on the ulcer surface. 2 - Granulation tissue: Pink or beefy red tissue with a shiny, moist, granular appearance. 3 - Slough: Yellow or white tissue that adheres to the ulcer bed in strings or thick clumps or is mucinous. 4 - Necrotic tissue (eschar): Black, brown, or tan tissue that adheres firmly to the wound bed or ulcer edges.</p> <p>52F. TOTAL PUSH SCORE (Sum of above three items -- C, D and E)<br/>Admission: _____ Discharge: _____</p> <p><b>SAFETY</b></p> <p>53. Balance problem<br/>(0 - No; 1 - Yes)<br/>e.g., dizziness, vertigo, or light-headedness<br/>Admission: _____ Discharge: _____</p> <p>54. Total number of falls during the rehabilitation stay<br/>Admission: _____ Discharge: _____</p> | 0                  | 1         | 2         | 3                                     | 4     | 5     | 6                               | 7     | 8             | 9  | 10    | No    |  |  |  |  |  |  |  |  |  | Worst | Pain |  |  |  |  | Moderate |  |  |  |  | Possible Pain |
| 0   | 1  | 2                  | 3         | 4         | 5                                     | 6     | 7     | 8                               | 9     | 10            |  |       |       |  |  |  |  |  |  |  |  |  |       |      |  |  |  |  |          |  |  |  |  |               |
| No  |  |                    |           |           |                                       |       |       |                                 |       | Worst         |  |       |       |  |  |  |  |  |  |  |  |  |       |      |  |  |  |  |          |  |  |  |  |               |
| Pain  |  |                    |           |           | Moderate                              |       |       |                                 |       | Possible Pain |  |       |       |  |  |  |  |  |  |  |  |  |       |      |  |  |  |  |          |  |  |  |  |               |
| <p style="text-align: center; background-color: #f2f2f2; margin: -10px -10px 10px -10px;">Quality Indicators</p> <p><b>RESPIRATORY STATUS</b><br/>(Score items 48 to 50 as 0 - No; 1 - Yes)</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 20%; text-align: center;">Admission</th> <th style="width: 20%; text-align: center;">Discharge</th> </tr> </thead> <tbody> <tr> <td>48. Shortness of breath with exertion</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>49. Shortness of breath at rest</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>50. Weak cough and difficulty clearing airway secretions</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">_____</td> </tr> </tbody> </table> <p style="font-size: small; margin-top: 10px;">* The FIM data set, measurement scale and impairment codes incorporated or referenced herein are the property of U B Foundation Activities, Inc. ©1993, 2001 U B Foundation Activities, Inc. The FIM mark is owned by UBFA, Inc.</p>  |  |                    | Admission | Discharge | 48. Shortness of breath with exertion | _____ | _____ | 49. Shortness of breath at rest | _____ | _____         | 50. Weak cough and difficulty clearing airway secretions | _____ | _____ |  |  |  |  |  |  |  |  |  |       |      |  |  |  |  |          |  |  |  |  |               |
|   | Admission  | Discharge          |           |           |                                       |       |       |                                 |       |               |  |       |       |  |  |  |  |  |  |  |  |  |       |      |  |  |  |  |          |  |  |  |  |               |
| 48. Shortness of breath with exertion   | _____  | _____              |           |           |                                       |       |       |                                 |       |               |  |       |       |  |  |  |  |  |  |  |  |  |       |      |  |  |  |  |          |  |  |  |  |               |
| 49. Shortness of breath at rest   | _____  | _____              |           |           |                                       |       |       |                                 |       |               |  |       |       |  |  |  |  |  |  |  |  |  |       |      |  |  |  |  |          |  |  |  |  |               |
| 50. Weak cough and difficulty clearing airway secretions  | _____  | _____              |           |           |                                       |       |       |                                 |       |               |  |       |       |  |  |  |  |  |  |  |  |  |       |      |  |  |  |  |          |  |  |  |  |               |

## APPENDIX D

### UK INTERNAL REVIEW BOARD OFFICE OF RESEARCH INTEGRITY



Office of Research Integrity  
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#### EXEMPTION CERTIFICATION

MEMO: Melba Custer, MS, OT  
Rehabilitation Services & Divisions

PI phone #:

FROM: Institutional Review Board  
c/o Office of Research Integrity

SUBJECT: Exemption Certification for Protocol No. 11-0962-X2B

DATE: January 10, 2012

On January 5, 2012, it was determined that your project entitled, *Models of Satisfaction with a Rehabilitation Continuum of Care*, meets federal criteria to qualify as an exempt study.

Because the study has been certified as exempt, you will not be required to complete continuation or final review reports. However, it is your responsibility to notify the IRB prior to making any changes to the study. Please note that changes made to an exempt protocol may disqualify it from exempt status and may require an expedited or full review.

The Office of Research Integrity will hold your exemption application for six years. Before the end of the sixth year, you will be notified that your file will be closed and the application destroyed. If your project is still ongoing, you will need to contact the Office of Research Integrity upon receipt of that letter and follow the instructions for completing a new exemption application. It is, therefore, important that you keep your address current with the Office of Research Integrity.

For information describing investigator responsibilities after obtaining IRB approval, download and read the document "PI Guidance to Responsibilities, Qualifications, Records and Documentation of Human Subjects Research" from the Office of Research Integrity's Guidance and Policy Documents web page [<http://www.research.uky.edu/ori/human/guidance/htm#PIresp>]. Additional information regarding IRB review, federal regulations, and institutional policies may be found through ORI's web site [<http://www.research.uky.edu/ori/>]. If you have questions, need additional information, or would like a paper copy of the above mentioned document, contact the Office of Research Integrity at (859) 257-9428.

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## VITA

Melba G. Custer, MS, OT/L

### **GENERAL INFORMATION**

Birthplace and date: Winchester, TN 7/6/61

### **EDUCATION**

|           |   |
|-----------|---|
| 2002-2012 | Doctor of Philosophy in Rehabilitation Sciences<br>University of Kentucky<br>Anticipated Graduation Date of August 2012 |
| 1995-2001 | Master of Science in Occupational Therapy – May 2001<br>Eastern Kentucky University                                     |
| 1999      | Post Baccalaureate Certificate – May 1999<br>Eastern Kentucky University  |
| 1983-1987 | Bachelor of Science in Accounting<br>University of Kentucky   |
| 1980-1981 | Middle Tennessee State University   |
| 1979-1980 | Motlow State Community College  |

### **PROFESSIONAL EXPERIENCE**

**Assistant Professor** – 8/07 – present. Department of Occupational Therapy, Eastern Kentucky University.

**Occupational Therapist** – 8/99 – 5/07. Professional Rehabilitation Associates at Clark Regional Medical Center and its affiliates

**Rehabilitation Supervisor**-1/02-5/07. Professional Rehabilitation Associates at Clark Regional Medical Center and its affiliates

## **PRESENTATIONS**

- Custer, M. (2012, February 7). *Box-U-Pation: A Tool to Promote Critical Thinking in Occupational Therapy*. Fifth Annual Quality Enhancement Project (QEP) Showcase. Eastern Kentucky University. Richmond, KY. Poster.
- Custer, M. (2011, September 17). *Client satisfaction: An important construct for outcome research*. Kentucky Occupational Therapy Association Annual Conference. Louisville, KY. Presentation.
- Custer, M. (2011, September 20). *Client Satisfaction Ratings in Rehab Outcomes*. KARRN Conference. Somerset, KY. Poster.
- Custer, M. & O'Brien, S. (2011, April 15). *Rehab outcomes: What matters most for client satisfaction*. American OT Association Conference. Philadelphia, PA. Presentation.
- O'Brien, S. P., & Custer, M. G. (2009, April). *Inquiry teams: Creating opportunities for translational scholarship*. American Occupational Therapy Association Annual Conference, Houston, TX. Presentation.
- O'Brien, S. P., & Custer, M. G. (2009, March). *Engaged advising: Facilitation using an inquiry team model*. Kentucky Academic Advising Conference. Poster.
- Custer, M., Tudor, L., & Banks, W. (2008, September). *Client-centered satisfaction with continuum of care*. Kentucky Occupational Therapy Association Annual Conference, Paducah, KY. Presentation.
- Custer, M., & Tudor, L. (2008, April). *Measuring client-centered perceptions of care across the continuum*. American Occupational Therapy Association Annual Conference, Long Beach, CA. Poster.
- Custer, M., & Tudor, L. (2007, September). *Client-centered: Perception of care across the continuum*. Kentucky Occupational Therapy Association Annual Conference, Somerset, KY. Poster.
- Custer, M., & Tudor, L. (2007, May). *Client perception of care across the continuum*. Cardinal Hill Rehabilitation Hospital Research day, Lexington, KY. Poster.
- Huebner, R. A., Custer, M. G., Freudenberger, L., & Nichols, L. R. (2002, May). *Effects of occupational therapy on health, productivity, and quality of life*. American Occupational Therapy Association Annual Conference, Miami, FL. Paper.
- Huebner, R. A., Custer, M. G., Freudenberger, L., & Nichols, L. R. (2001, October). *Effects of occupational therapy on health, productivity, and quality of life*. Kentucky Occupational Therapy Association Annual Conference, Richmond, KY. Paper.

Custer, M. G. (2001, October). *Goals, process variables, and satisfaction with goal attainment and occupational therapy in an outpatient setting*. Kentucky Occupational Therapy Association Annual Conference, Richmond, KY. Poster.

Custer, M. G. (2001, April). *Goals, process variables, and satisfaction with goal attainment and occupational therapy in an outpatient setting*. American Occupational Therapy Association Annual Conference, Philadelphia, PA. Poster.

## **PUBLICATIONS**

Custer, M., Huebner, R. A., Freudenberger, L., & Nichols, L. Client Chosen Goals in Occupational Therapy: Strategy and Instrument Pilot. *Occupational Therapy in HealthCare*. (Re-submitted with revisions, April 2012).

Bibb, S., O'Brien, S., & Custer, M. (2012). LoAD Books: Using e-technology to facilitate children's reading skills. American Occupational Therapy Association Technology Special Interest Section Quarterly, 22(1), 1–4.

Huebner, R. A., Jones, B., Miller, V. P., Custer, M., & Critchfield, B. (2006). Comprehensive family services and customer satisfaction outcomes. *Child Welfare*, 85(4), 691–714.

Huebner, R. A., Custer, M., Freudenberger, L., & Nichols, L. (2006). The occupational therapy practice checklist for adult physical rehabilitation. *American Journal of Occupational Therapy*, 60(4), 388–396.

Huebner, R. A., Bales, L., & Custer, M. G. (2003). Tub benches for people with spinal cord injury: Luxury or necessity? *Case Manager*, 14, 58–63.