IMPACT OF PHYSICAL ENVIRONMENT OF A REHABILITATION FACILITY ON THE SOCIAL SUPPORT AND INTERACTION PATTERNS OF SPINAL CORD INJURY PATIENTS AND THEIR FAMILY AND FRIENDS: A NATURALISTIC INQUIRY

A Thesis

by

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ABSTRACT

Previous research has demonstrated the positive effects of family and friends support on the overall well-being of Spinal Cord Injury (SCI) rehabilitation patients. This study explores the ways in which physical environment can provide for social support to SCI patients in inpatient rehabilitation in order to improve their health outcomes. Since there is not enough literature available in the field of architecture to help in the development of hypotheses to be tested related to the physical environment of the social situation, the researcher aimed to develop a theory for future studies. This study was conducted as a naturalistic inquiry. Ten medical staff caring for the patient group and currently working at Willis-Knighton Health System (WKHS), Shreveport, LA were interviewed in order to understand their perceptions regarding the effect of the healthcare environment on the quality of interaction between patients and their family and friends.

The results indicated that caregivers believed patient rooms to have highest potential of providing quality patient-family interaction because patients spend most of their days in their rooms. Physical Therapy gym, Occupational Therapy gym and leisure room (day room) were also discussed as important places that patients and families could use together. Lack of enough space was thought to be the biggest barrier in the nature of their interaction. Implications of this study are that additional studies are required to determine the minimum space requirement for SCI patient rooms with family zone. Architectural design of these spaces should account for the functional space requirement.

To my guru, my grandparents, my parents and my husband

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NOMENCLATURE

FGI	Facility Guidelines Institute
LOS	Length Of Stay
NS	Nidhi Setya
NSF	Net Square Feet
P1	Participant number 1
P2	Participant number 2
P3	Participant number 3
P4	Participant number 4
P5	Participant number 5
P6	Participant number 6
P7	Participant number 7
P8	Participant number 8
P9	Participant number 9
P10	Participant number 10
PT	Physical Therapy
OT	Occupational Therapy
SCI	Spinal Cord Injury
SCIRP	Spinal Cord Injury Rehabilitation Patients
SF	Square Feet
WKHS	Willis Knighton Health System

VA	Department of Veterans Affairs

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1. INTRODUCTION

1.1 Background

The spinal cord runs through the vertebral column and is primarily responsible for transmitting neural signals from brain to other parts of the body and vice versa (Arce, Sass, & Abul-Khoudoud, 2001; Wuermser et al., 2007). It executes the majority of physiological functions. Spinal cord injury (SCI) includes any condition which has or may cause damage to the spinal cord resulting in a temporary or permanent change in its normal motor, sensory, or autonomic functions (Chittiboina, Cuellar-Saenz, Notarianni, Cardenas, & Guthikonda, 2012; Ditunno, Young, Donovan, & Creasey, 1994).

According to National Spinal Cord Injury Statistical Center (NSCISC) the estimated annual incidence of SCI is approximately 40 cases per million in the United States or 12,000 new cases each year (Chittiboina et al., 2012). This does not include those victims, who die at the scene of the accident. Around 4,000 patients die before reaching the hospital and 1000 die during their hospitalization. Consequences of SCI include partial or complete loss of motor and neurological skills. In addition to that, SCI has also been known to significantly affect the socioeconomic and psychological aspects of the patient's life (Warren, Wrigley, Yoels, & Fine, 1996; Westgren & Levi, 1998). Patients are first stabilized in acute care hospitals and then are transferred to rehabilitation facilities where a team of experts helps them regain their lost skills and attain functional independence. Significant number of SCIPs go home and join the community after rehabilitation (Schonherr, Groothoff, Mulder & Eisma, 1996; Woolsey,

1985; Yarkony et al., 1987), therefore the task of a rehabilitation facility is to provide the patients with an environment which can enable them to develop a satisfactory and independent lifestyle. Figure 1 demonstrates the relative incidence of the causes of traumatic SCI in United States of America.

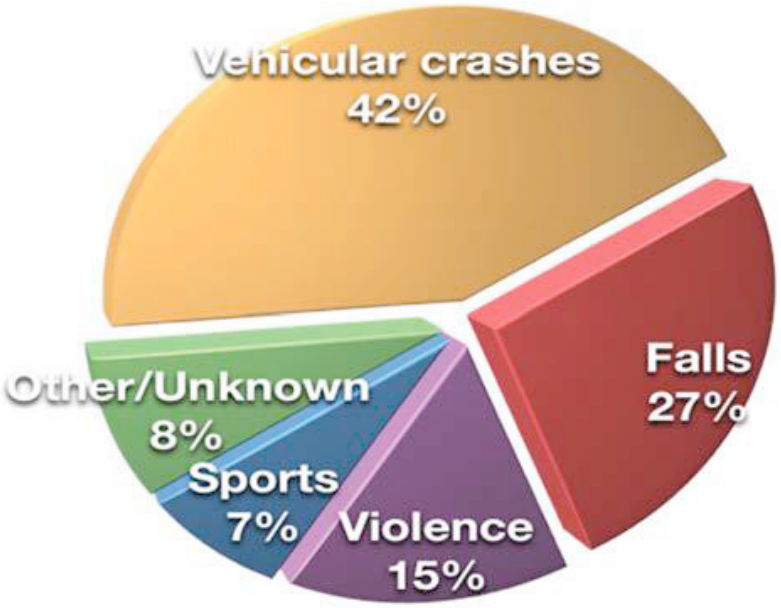

Figure 1. Relative incidence of the causes of traumatic SCI in the United States (Chittiboina et al., 2012)

Previous research has demonstrated the positive effects of social support and social interaction on the overall well-being of SCIRPs. Researchers have found social interaction to have moderate to strong correlation with life satisfaction (Crisp, 1992; McColl & Rosenthal, 1994; Rintala, Young, Hart, Clearman & Fuhrer, 1992; Schulz & Decker, 1985; Warren, Wrigley, Yoels & Fine, 1996), moderate correlation with psychological functioning (Crisp, 1992; Elliot et al., 1991; Mackelprang & Hepworth,

1987; McColl & Rosenthal, 1994; Schulz & Decker, 1985) and no to weak correlation with physiological functioning (Anson, Stanwyck & Krause, 1993; McGown & Roth, 1987; Rintala et al., 1992). This indicates that social support should be provided to these patients while they are in the rehabilitation facility.

This study explores the ways in which physical environment can provide social support to patients in rehabilitation, hence improving their health outcomes.

1.2 Statement of the Problem

Patients rehabilitating from spinal cord injury suffer from physiological challenges like chronic pain and adjusting to their disability; psychological challenges like anxiety and depression; and dissatisfaction with their quality of life. Social support has been seen to help people cope with the consequences of chronic conditions (Cohen et al., 1985; Veiel, 1992; De Ridder et al., 1996) and live with physical disability (Patrick et al., 1986; De Witte, 1991). In the case of patients rehabilitating from spinal cord injuries, social support helps by improving their overall well-being. Researchers studying this effect on spinal cord injury patients have found correlations between social support and their life satisfaction (Schulz et al., 1985; Crisp, 1992; Fuhrer et al., 1992; Rintala et al., 1992; McColl et al., 1994), psychological functioning (Schulz et al., 1985; Mackelprang, 1987; Elliot et al., 1991; Crisp, 1992; McColl et al., 1994) and physiological functioning (Fuhrer et al., 1992; Rintala et al., 1992).

Several studies in the field of healthcare design have demonstrated that the physical environment impacts health (Ulrich, 2004), but attention has to be paid to

explore the ways in which healthcare facility design can foster social support (Ulrich, 2001).

To better understand that how social support and social interaction can be promoted in such facilities through architectural design, research is needed to first identify the various spaces that the concerned population uses for social activities. In addition to that, in depth knowledge of the characteristics of the physical environment of those spaces is required. Since the caregivers are present with the patients most of the times, their perceptions, thoughts and experiences should be used to help identify the elements of the physical environment that affects the social support and interaction patterns between the patients and their family and friends. This understanding will help healthcare architects determine critical research topics and hypotheses for future research pertaining to the promotion of social support through design and hence improving patient outcomes.

1.3 Research Goals

1. To understand the point of view of medical staff trained in providing care to spinal cord injury rehabilitation patients (SCIRPs) about social support and social interaction patterns between the patients and their family and friends as it relates to the physical environment.
2. To understand the existing social support and social interaction behavior.
3. To develop an understanding of the actor, place and activity related to the social situation.

4. To know what caregivers think, perceive and assume about the role of physical environment on the nature of social support and social interaction.
5. To determine and define critical future research topics related to the physical environment and social interaction in rehabilitation facilities.
6. To develop research questions and research hypothesis about the role of the physical environment regarding the quality and quantity of social support for SCIRPs relative to the physical environment for future studies.

1.4 Research Questions

1. What are the various social interactions prevalent for SCI rehab inpatients in the facilities?
2. Who are the participants in those social interactions?
3. What is the role of each participant?
4. When during the day/week do those social activities take place?
5. Where do those interactions take place?
6. What are the physical characteristics of the spaces used for social interactions?
7. What do the experts (nurses, physical therapists & occupational therapists) perceive as the pros and cons of the physical environment for social interactions?
8. How are the spaces used?
9. How does the physical environment help accomplish the goals of the social activities and actors?

10. What are the barriers for social activities in the physical environment that impact social interaction?

1.5 Significance of the Study

Consequences of spinal cord injury can be life alerting for the patients and their family members. Rehabilitation helps the patients regain their lost emotional and physical independence in order to return to and live in the community successfully. Since the average length of stay of a patient with SCI in rehabilitation is as long as 44 days, it is very important that the physical environment encourages positive health outcomes. Since there is evidence to support the positive effects of social support and interaction on SCIP's emotional and physical health as well as overall life satisfaction, this study explores the ways in which quality of social interaction can be increased in SCI rehabilitation facilities through design. The use of naturalistic inquiry method to interview the caregivers will help gain in-depth knowledge about their perceptions and thoughts about the role of physical environment on the patient's social activities. This evidence will help healthcare architects to design future studies based on the critical research questions and hypotheses which will be the result of this study.

2. LITERATURE REVIEW

2.1 Spinal Cord Injury and the Healthcare Environment

The Department of Veterans Affairs has published guidelines for the design of centers dedicated to SCI patients. This document includes layouts of various kinds of spaces in a healthcare facility with minimum space requirements. Some of the spaces from the document that could be used for or lead to interaction between the patient and their family and friends are as follows:

1. **SCI Patient Room:** Minimum space requirement for patient rooms is 210 SF.

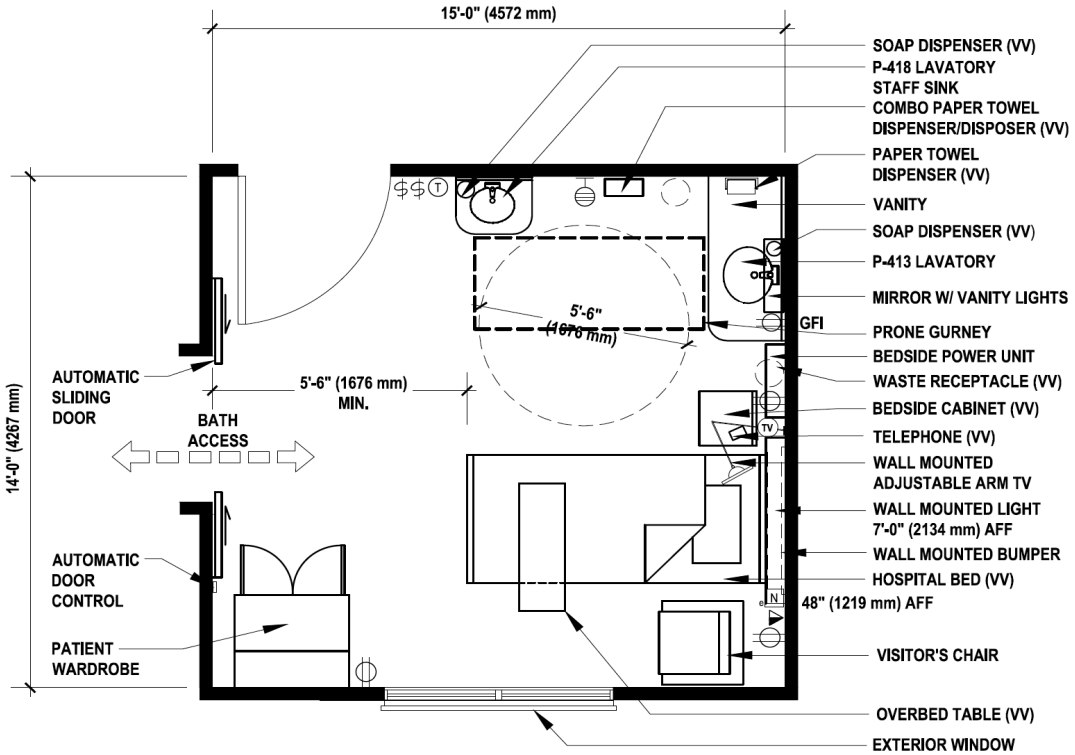

Figure 2. Acute care one-bed SCI patient room floor plan
(Spinal Cord Injury/Disorders Center Design Guide 2011, Section 3, Pg.3-9)

The suggested layout is such that caregivers have access to a clinical zone as soon as they enter the patient room to help the patient. The patient bathroom is connected to the room. Sliding doors have been suggested between the room and the bathroom. ADA guidelines have been followed to provide enough space between the clinical zone, the patient bed and the bathroom for unobstructed maneuver of a wheelchair inside the room. A visitor chair has been provided beside the patient bed along the window wall but family zone for overnight stay has not been included in the plan (See Figure 2.).

2. **Patient Bathroom:** Suggested dimensions of the patient bathroom are 8‘X15’ with a total area of 120 SF. The entire bathroom is ADA compliant (See Figure 3.).

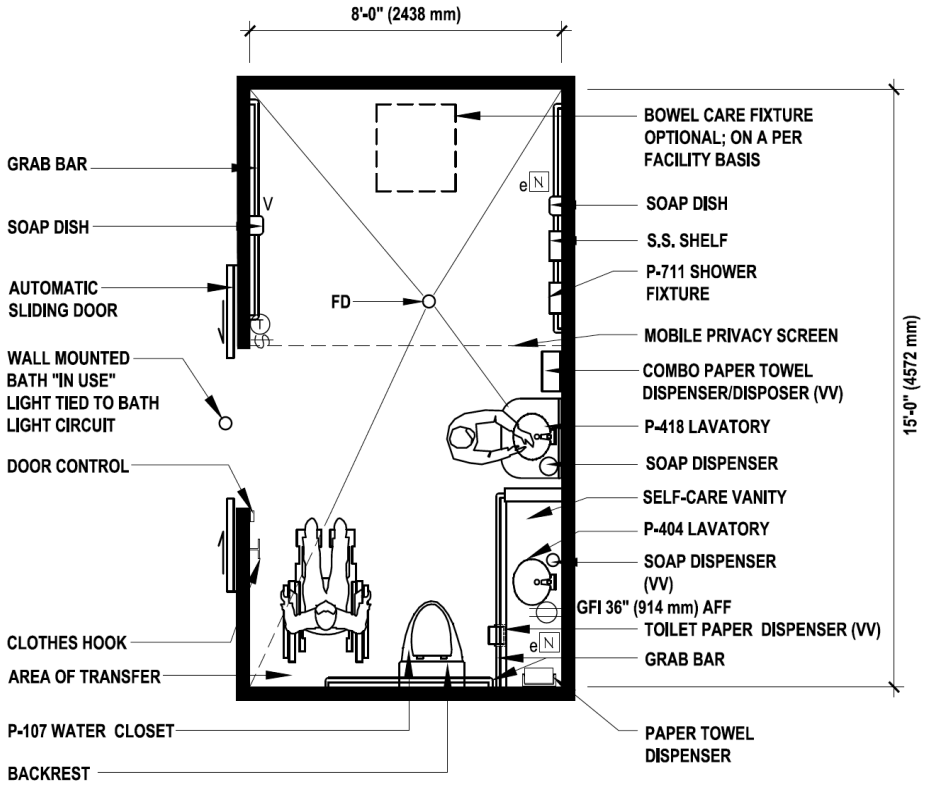

Figure 3. Patient bathroom floor plan
(Spinal Cord Injury/Disorders Center Design Guide 2011, Section 3, Pg.3-25)

3. Day room: The purpose of this room is to provide the opportunity for multiple activities to the patients and their family members. There is a TV, magazine rack and a bulletin board in the room that the patients can use. A wheelchair accessible round table for small group has been provided, which has been seen to promote social gatherings (Holahan, 1972; Sommer & Ross, 1958) (See Figure 4.).

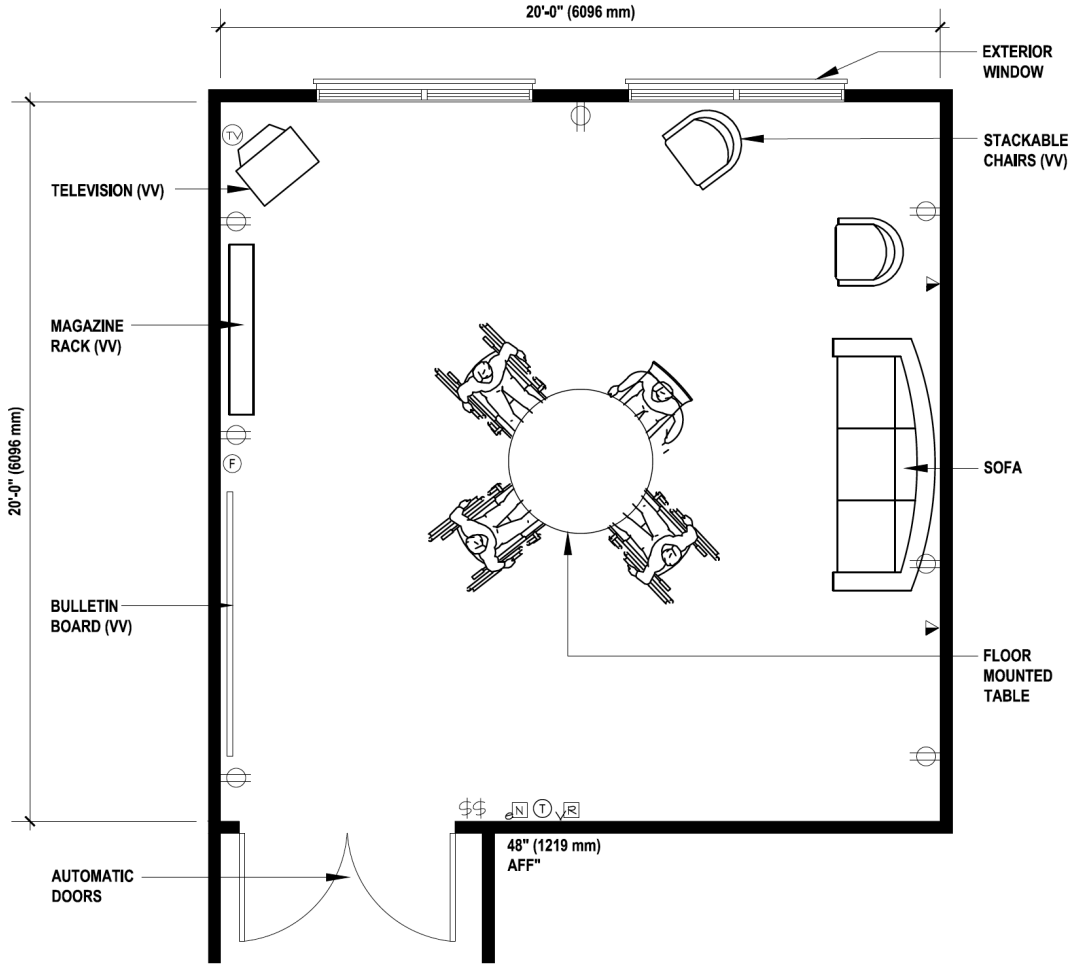

Figure 4. Day room/lounge floor plan
(Spinal Cord Injury/Disorders Center Design Guide 2011, Section 3, Pg.3-53)

4. Physical Therapy Gym: According to the Department of Veterans Affairs, a fully equipped physical therapy gym for SCI rehabilitation patients should be at least 1850 SF in area. The dimensions of the prototype they provide are 37‘X50’. Entrance to the gym has automatic doors for easy use of the patients on wheelchairs (See Figure 5.).

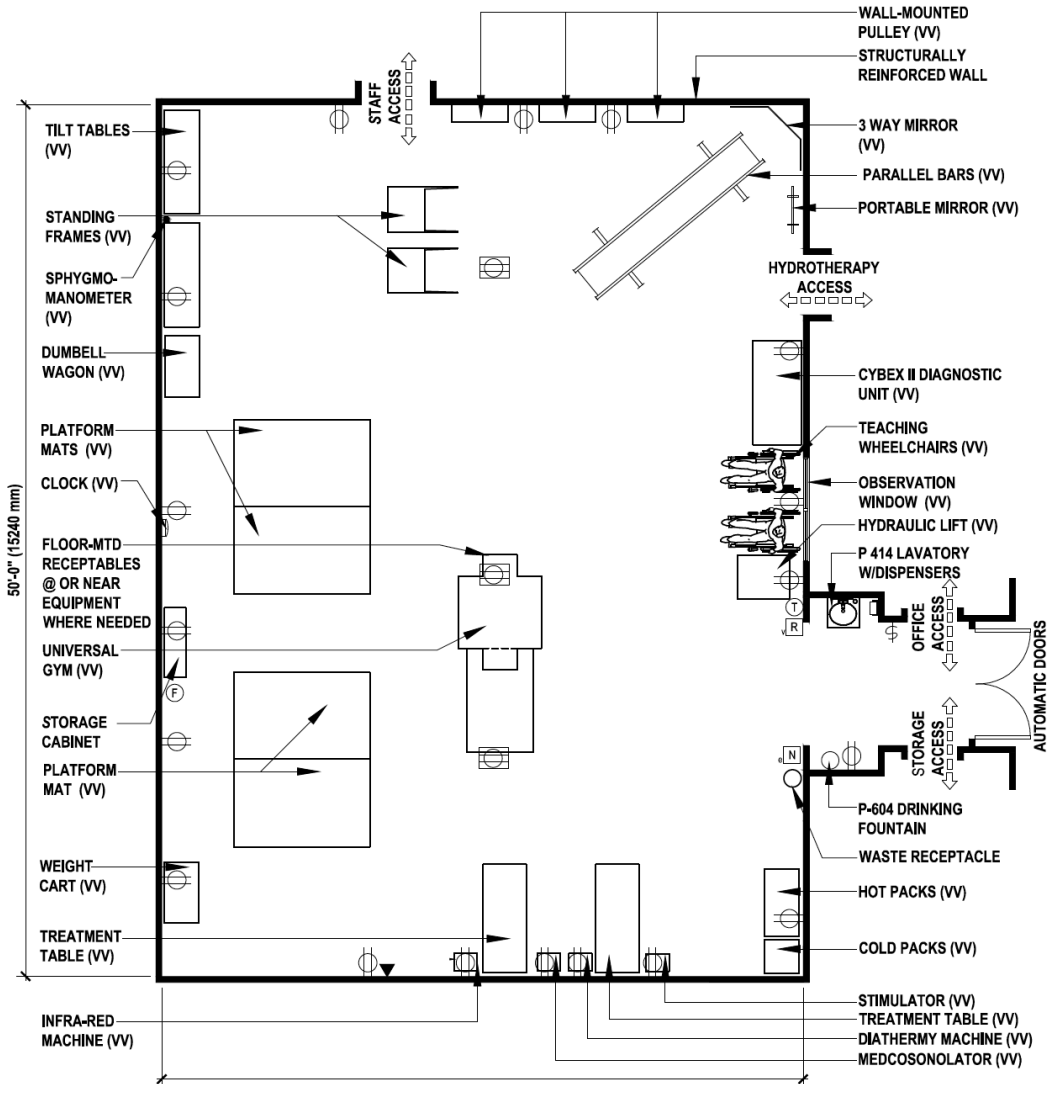

Figure 5. Physical therapy treatment clinic floor plan
(Spinal Cord Injury/Disorders Center Design Guide 2011, Section 3, Pg.3-143)

5. Occupational Therapy Gym: The minimum area required for a fully equipped OT gym for SCI patients according to VA guidelines is 800 SF. The dimension of the floor plan provided in the document is 25‘X32’. Similar to PT gym, OT gym has a automatic front door for easy access patients on wheelchairs (See Figure 6.).

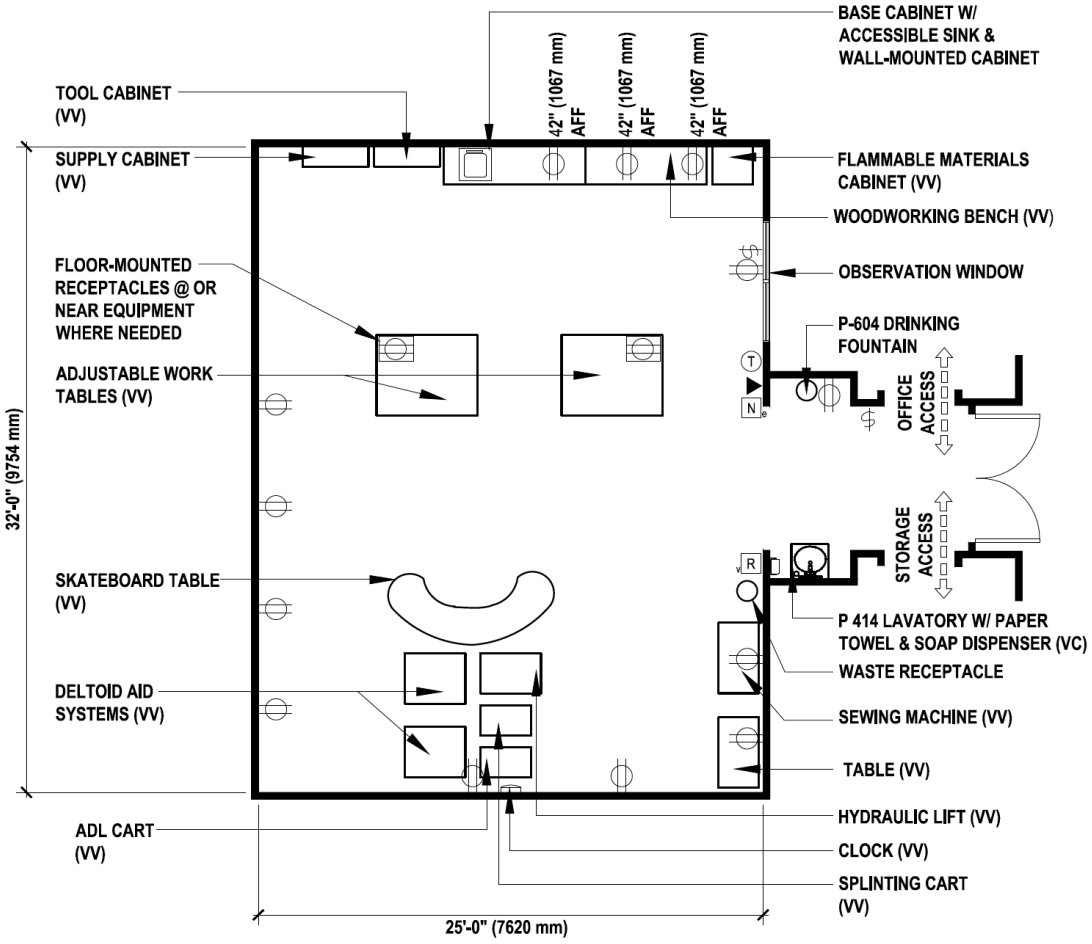

Figure 6. Occupational therapy floor plan
(Spinal Cord Injury/Disorders Center Design Guide 2011, Section 3, Pg.3-153)

Table 1 summarizes the information from the Department of Veterans Affairs guidelines for Spinal Cord Injury/Disorder Centers.

ROOM	SPACE REQUIREMENT (NSF)
Acute Care One-Bed SCI Patient Room	210
Patient Bathroom	120
Day Room/Lounge	400
Physical Therapy Treatment Clinic	1850
Occupational Therapy	800

Table 1. Space requirements for SCI Centers according to U.S. Department of Veterans Affairs

2.2 Impact of Physical Environment on Social Interaction

A study examined characteristics of interior design settings that influence the extent of social interaction in day rooms (Holahan, 1972). The researchers found out that seating arrangement had a very strong influence on the quality and quantity of social interaction between the patients. They also discovered that patients were more socially active if the seating was arranged around a table where they could sit with their family and friends in a group than if chairs were lined up along the walls of the day rooms. It was seen that, when patients were allowed to move the furniture according to their will, there was much less social interaction observed than expected.

Another study on the role of physical environment in social interaction patterns suggested that the duration of stay of family and friends is higher in patient rooms which

have carpet flooring as compared to vinyl (Harris, 2000). Researchers have found single rooms to be more supportive of patient interaction with their family and friends as compared to multiple patient rooms. This happens because family and friends do not prefer to stay in multiple bed patient rooms (Sallstrom, Sandman & Norberg, 1987). This implies that multiple patient accommodations in the same room should be avoided as it hampers the quantity and quality of social support.

Quality of interaction of patients will be much better if their perceptions of the physical environment are positive. Research shows that patients are more satisfied with respect to accommodation setting and comfort of their family members in single rooms rather than double rooms (Press Ganey, 2003). Thus, single patient rooms with comfortable family accommodation help foster social support. Staff also prefers family presence more in single room vs. double occupancy rooms (Chaudhury et al., 2003).

2.3 Design Research on Rehabilitation Facilities

Medina-Mirapeix et. al. (2013) focused on identifying the elements of the healthcare environment within an outpatient rehabilitation setting, which influence the patient's perceptions regarding the quality of care they receive at the facility. The researchers used grounded theory as an approach to this study. They formulated an open ended questionnaire and performed semi-structured interviews with the 57 patients. These were not individual interviews with each participant. They divided the participants into nine focus groups. All interviews were transcribed verbatim, where the names of the participants were changed into numeric codes. Units and categories were formed using

the transcribed data as a part of data analysis by two authors independently. Those were later compared and the uniform themes and sub-themes were retained. The result of the study was that there are three factors that influence the patient's perceptions of the quality of care they get in an outpatient rehabilitation facility. Those were facility design, ambient conditions and social factors.

Another study was performed (Raanaas, Patil & Hartig, 2011) to examine the role of views of nature through patient room windows in a residential rehabilitation setting. Two-hundred and seventy-eight patients (both males and females) were randomly assigned to either rooms with nature views or the ones with a view of a building that blocked any views to nature. One of the tools of measurement was self-reported physical and mental health (SF-12). Researchers found the women who had rooms without nature views felt a decline in their physical health and men reported a decline in their mental healths. Both genders were thus negatively influenced by the obstructed view.

2.4 Interview Methods in the Healthcare Design Research

Healthcare environments are complex in nature where an array of relationships and interactions exist between the actors among themselves and with the physical environment around them. Johnson and Barach (2008) studied the use of qualitative methods in healthcare design research and found methods of qualitative research (observations, interviews and focus groups) to be most appropriate in the understanding of unknown complex issues and important variables pertaining to the healthcare context. The authors suggest that these methods highly complement quantitative methods as the results could

be used to form research hypotheses, which could further be tested by using quantitative methods.

A qualitative study was conducted (Rowlands & Noble, 2008) using naturalistic inquiry to understand the perspective of advanced cancer patients regarding the impact of the patient ward physical environment on their quality of life. The researchers interviewed twelve patients from a regional cancer institute. These patients were selected on the basis of purposive sampling. Semi structured questions were asked about the experiences of the patients at either the bedside of the patient or in another private room. The selection of the location for the interview was done by the patient. The answers were tape recorded and transcribed verbatim for analysis. Data analysis resulted in the discovery of four major themes pertaining to the concerned situation which both supported and challenged existing literature. The authors stated that even though purposive sampling was done and theoretical saturation was achieved with the twelve informants, the results still could not be representative of the entire advanced cancer patient population since the sample was too small.

Another study used the same methodology to explore the ways users of healthcare facility waiting rooms feel about the physical environment and how they think their wellbeing is affected by it (Vuong, Cain, Burton & Jennings, 2012). The authors selected to perform semi structured interviews with open ended questions. Informants for this research study were selected according to convenience sampling.

2.5 Grounded Theory and Naturalistic Inquiry

Grounded theory was developed and first applied by two American sociologists, Barney Glaser and Anselm Strauss, while they were working on their book *Awareness of Dying* (1965). Later they wrote the book *The Discovery of Grounded Theory* (1967), which explained the newly formed methodology. Grounded theory method is a systematic qualitative method of inquiry in the social sciences, which unlike other typical research methodologies, does not start with existing theoretical frameworks and research hypotheses but rather results in their development based on the analysis of the collected data (Glaser & Strauss, 1967). This is done by using the strategies of constant comparison throughout the process of data collection and analysis. The progressive interpretation of the data leads to guide the direction of future data collection. Grounded theory is different from other qualitative methodologies (ethnography, phenomenology and case study) because it focuses on the development of theory (Denzin & Lincoln, 1994).

Naturalistic Inquiry method was developed and introduced in 1985 by Dr. Yvonna S. Linlcon and Dr. Egon G. Guba through their book called *Naturalistic Inquiry*, as an alternative to the then conventional 'positivistic' qualitative research methods. Grounded theory is one of the fourteen characteristics of a naturalistic inquiry (Lincoln & Guba, 1985, p. 41). The various characteristics of a naturalistic inquiry as described by the authors are as follows:

1. It is conducted within the natural setting of the social situation under study.

2. Data is gathered through human instruments. This means that the researcher considers himself or herself and other actors of the social situation as an instrument of data collection.
3. Unlike other methodologies, intuition of the researcher is a part of the data collection and analysis process.
4. Qualitative methods are preferred over quantitative methods. This is done because qualitative methods explain the nature of interaction between the researcher and other actors in the social situation more easily.
5. Sample is selected such that data could be benefitted with the viewpoints of an array of actors. This is called purposive sampling.
6. Since the objective of a naturalist is to discover new constructs, the preferred analysis is inductive in nature resulting in theory development.
7. Grounded theory forms a characteristic as the focus is the development of a theory.
8. The analysis of collected data through the data collection process guides the design and direction of future data collection.
9. Meanings of the words and phrases used by the actors as understood by the researcher are negotiated with them before forming the final definitions. This is done because the purpose of the researcher is to reconstruct the constructions of reality of the informants.
10. Results are reported in the case study reporting mode because multiple realities that are discovered through the research project need to be described.
11. Data is interpreted with the viewpoint of informants. Generalizations are not made.

12. The results are not generalized as the researcher believes that there could be other realities existing related to the social situation that are not discovered through the research project.
13. Boundaries on the scope of the research are placed based on the analysis and findings during the process of data collection. This is done to ensure that the researcher's personal bias does not affect the scope of the research.
14. Internal and external reliability, validity and objectivity are tested using non-conventional methods as the conventional methods cannot be applied to naturalistic inquiry.

As mentioned in the statement of the problem, since there is not enough literature available in the field of architecture which could help in the development of hypotheses to be tested related to the physical environment of the social situation, the researcher aims to develop theory and hypotheses for future studies. This study will be conducted as a naturalistic inquiry.

3. METHODOLOGY

3.1 Setting

Two free standing inpatient rehabilitation facilities in Texas were initially selected and simultaneously contacted by telephone in order to get appointments with the Director of Rehabilitation at both facilities. The directors preferred a telephone conversation to begin with and the researcher communicated the purpose and requirements of the research study. Both directors requested the researcher to wait until they make a decision about it. After not hearing back for them for a couple of weeks, they were left reminders by the researcher. This went on for two months with one facility before they refused to participate in the study and the other facility refused too after a couple of more months. The reason provided was that they think that the patient group is too vulnerable to talk about with someone not from a medical background.

While waiting to hear back from these rehabilitation centers, the researcher contacted several others around the country. Once center in White Plains, NY showed their interest and invited the researcher for a preliminary visit. They gave a grand tour of their facility in the first meeting and conveyed that any research would have to be approved by the Director of the inpatient rehab unit, who was on vacation at that time. A one page summary of methodology with a copy of interview questions were left for the Director during that visit. The Director rejected the request upon her return stating that their staff was too busy to take out the time to sit and talk to someone during their shifts and that they do not request their staff to stay longer than their predetermined shifts. She men-

tioned that they would have cooperated if the study was based on observation rather than interviews, because that would have meant that their staff-patient time would not be compromised.

The researcher then contacted two rehab centers in Shreveport, LA. One of those facilities closed down while the conversation regarding the project was in progress. The other one was at the North campus of Willis-Knighton Health System (WKHS), a medical center in Shreveport, LA. This group has three hospitals in the city of Shreveport and one in Bossier City, which is a twin city to Shreveport. Their inpatient rehabilitation unit is located on the third floor of their main hospital building on their main campus. The Director of Physical Medicine and Rehabilitation was contacted through the phone initially. He showed interest in the study in the first conversation stating that he likes to support research in his facility and that he would get back to the researcher after thinking about the logistics of their involvement in the study. The rest of the correspondence with him happened through emails.

The Director's first email back to the researcher from the included an Affiliation Agreement from WKHS, which they wanted to be signed by Texas A&M University before they could provide with a site authorization letter and allow the researcher to start collecting data. Due to the differences in the Laws of the Texas and Louisiana, the legal department at Texas A&M University found a few details in the form inconsistent with the laws of Texas and contacted the researcher's college. They specified that the legal department would support the agreement only if the college would sign it. A representative from the college after reading the agreement conveyed to the researcher that they

would sign it if IRB approval from TAMU was first received for the study. Thus, IRB application was submitted by the researcher at TAMU without a site authorization letter. It was stated in the application that the letter would later be added as an addendum. The agreement was signed by the College of Architecture as soon as IRB approval was received and was supported by the legal department at TAMU as well. Meanwhile, the IRB department at WKHS was contacted regarding the study. After consideration, they responded that due to the nature of the study, no IRB application was required at WKHS for this research project. This entire process post the researcher's first contact with WKHS took eight months.

Once WKHS received the signed affiliation agreement, site authorization letter was forwarded to the researcher, which was then added to the IRB application at TAMU. When access to the facility for data collection was granted, the researcher was informed that the location each interview would be chosen by each participant. On each interview day, the researcher went to any of the centralized nurse stations in the rehab department and the participant of the day was called by the staff upon request. Five out of ten interviews took place in the staff room and the rest were conducted in the leisure room. The researcher and the participant used to be the only two people in the room during each interview. Both staff room and the leisure room had a large table with chairs in the center of the room, which was used for the interviews.

The architecture firm that designed the hospital was contacted next in order to receive access to the floor plan of the department. The rehab unit consists of 40 patient rooms. These rooms are occupied by rehab patients suffering from spinal cord injury

stroke, arthritis, amputations of lower extremity, brain injury, multiple trauma, complex orthopedic disorder and neurological disorder. The inpatient rehab unit has been designed to be a part of the hospital so that immediate inpatient care is available to the patients, whenever needed. PT and OT gym are located on the same floor within the department. There are two centralized nurse stations and one staff room in the unit (See Figure 7.).

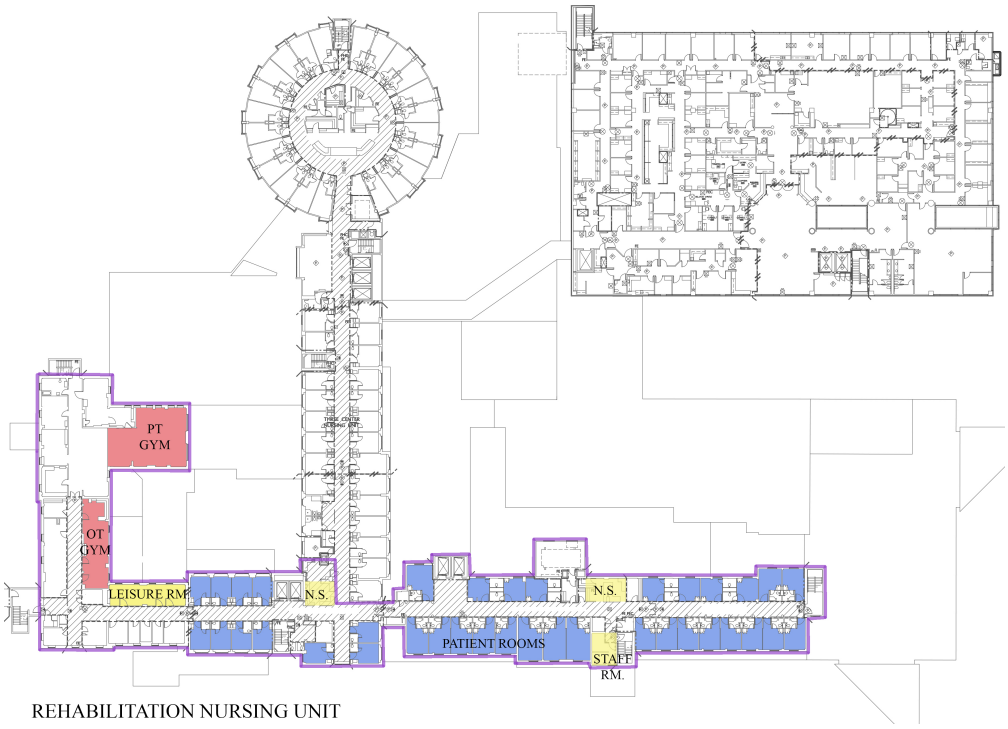

Figure 7. Third floor plan, Willis-Khighton Medical Center, Shreveport, LA
Source: TEG Architects LLC, Shreveport LA

3.2 Participants

Potential participants were contacted by the director of Physical Medicine & Rehabilitation at WKHS in order to seek their permission for participation in the study. Research objectives and participation requirements were communicated to them during this process. The researcher was contacted by the Director when ten staff members agreed to be a part of the research. This process was completed within then days from the day site authorization letter was received by the researcher. Research participants included ten experienced clinicians certified in caring for SCI rehab patients from WKHS inpatient rehabilitation department. All participants currently work at WKHS and provide care to the patient group. The group of experts included nurses, occupational therapists and physical therapists. This provided the study with the benefit of viewpoints of an array of caregivers and protected against missing of important concepts related to the SCI rehab social culture during data collection (Lincoln and Guba, 1984).

The researcher was given ten consecutive days by the director to complete the study at their facility. A schedule was prepared for those ten days by the director with the names of participants and the date and time they agreed to interview on. This schedule was not shared with the researcher. The researcher was only provided with the time of interviews for all ten days. The researcher showed up at least fifteen minutes early everyday and reported at the department's central nurse station. Then depending on the profession of the participant, interviews took place in either the staff lunch room (all nurses) or the leisure room (all therapists).

All participants were English speaking. Interviews were conducted, analyzed and reported in the English language. English language was also used to take field notes and develop transcripts for analysis. Literature review about the spinal cord injury, the role of rehabilitation in the treatment of SCI patients and the various programs and services that are provided to the patient during rehabilitation introduced the researcher to the unique vocabulary that is used in the culture of the interviewees. This helped the researcher ensure that the words used while forming the open-ended questions for the interview mean the same to both the interviewer and the interviewee. This further helped the researcher make certain that the most appropriate meaning of the words of the interviewees were used while transcribing and analyzing the interviews. While writing the conclusions or verbally presenting results, the researcher used the specialized words used by the caregivers during interviews accompanied by the best explanation of those words.

3.3 Data Collection

Before starting the interview, the participants were reminded about the purpose and the direction of the interview. The researcher carried an extra copy of the list of interview questions, which was provided to the interviewees. They were also informed that the researcher will be taking field notes and their permission was requested for tape recording the interview. A tape recorder was used to avoid any translations done by the researcher of the words used by the interviewees. This was done to ensure that any key terms in the vocabulary of the informant's culture were not missed (Spradley, 1979).

Throughout the interview, the participants were encouraged to use their specialized vocabulary. This was done to avoid the effect of the interviewee's translation competence. All interviews did not exceed sixty minutes.

One of the primary objectives of this study was to learn about the role of physical environment on social support patterns in SCI rehab facilities from the caregiver's point of view. Open-ended questions were formed so that the researcher was able to control the direction of the conversation without having any influence of the researcher's preconceived ideas on the content of the thoughts and experiences that the informants shared.

3.4 Data Analysis

Interviews were transcribed as soon as all interviews were conducted. Tape recording and field notes were used to completely transcribe the interviews. The transcriptions were typed on the computer in Microsoft word. The qualitative data collected thus took the form of text. This free flowing text which served as a proxy for experience of the interviewees was later interpreted through the analysis of codes and analysis of words. The technique of grounded theory was used to analyze codes.

The analysis of codes method was used to reduce the text into codes (Denzin & Lincoln, 2000). Every word on transcriptions was used for content analysis. Since one of the purpose of the study was to formulate hypotheses or propositions for future research, the nature of inquiry was generative which involved discovering of new constructs related to the social situation (Goetz and LeCompte, 1981). The analysis was thus induc-

tive in nature resulting in constructs and hypotheses development. The analysis was also meant to be subjective because the data collected was a combination of personal thoughts, feelings and experiences of the participants about the social situation.

Constant Comparison Method was adopted to analyze the data as it best suits this kind of study (Lincoln and Guba, 1985). The Lincoln and Guba method was used for content analysis. The process was as follows:

1. **Unitizing:** Each transcript was read for identification of individual units of information. These could be a word or a whole paragraph. The rule of thumb was that a unit should not be further breakable and should make sense by itself. Care was taken during this stage to avoid rejection of potential units to ensure any accidental rejection of an important component for analysis. Each identified unit from the data was noted on a separate 3x5 inches index card. The cards were coded as shown in Figure 8.

   The portion of the on the left of the colon signified that the unit is drawn from an interview (INT) and the number of the interview. On the right was the number of the unit identified from that interview. In the example in Figure 3, both the index cards belong to interview 1 (INT 1). The card on the left has the first unit found in data collected from interview 1, while the card on right has the second unit. Similarly, separate cards were designated to each unit. Cover index cards were prepared for each interview as shown in Figure 9.

   The portion on the left of the colon represents the number of the interview and the portion on the right represents the numeric range of units found in each

interview. Card numbers for units were sequential in nature throughout the interviews and did not start over.

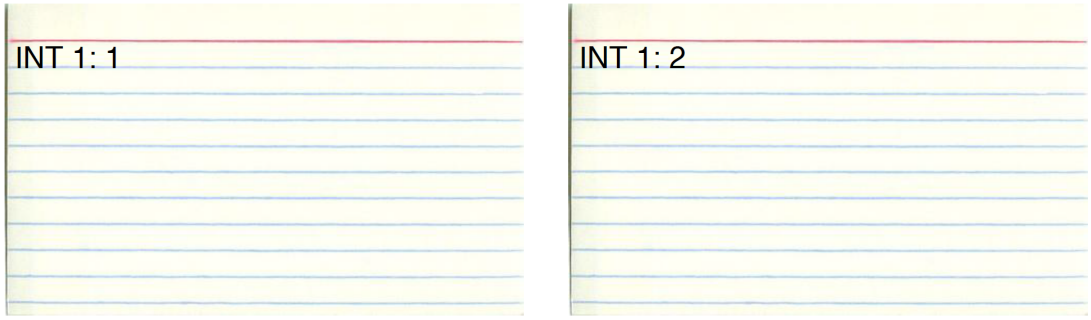

Figure 8. Numbering of index cards with units from interview

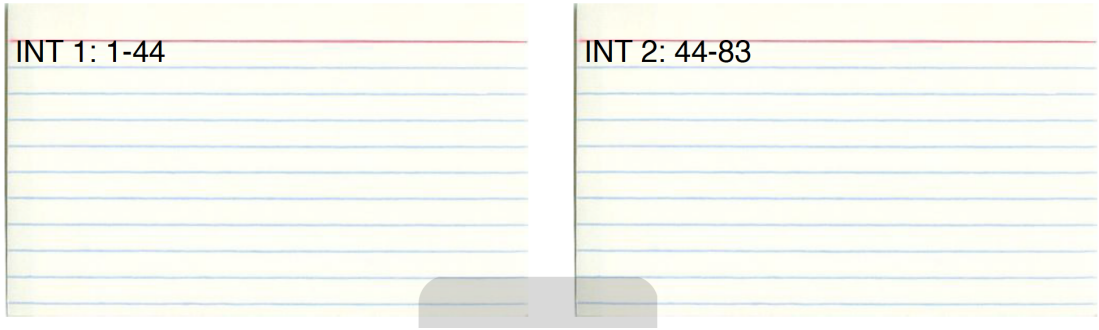

Figure 9. Cover index cards for interview 1 (left) and interview 2 (right)

2. **Categorizing:** Categories or domains were formed from the already identified units. Cover term, included terms, semantic relationship and boundary were the four basic elements in a domain (Spradley, 1979, p. 100). Cover term is the name that was given to a category. Included in terms were the units that together formed a category. Semantic relationship was the singular relationship that existed between each included term and the category. Boundary was the line that determined which terms could be included in the category and which could not. Boundary was always determined by the interviewee and not the researcher. The following list of the types of semantic re-

lationships developed by Spardley, 1979 for determination of categories was used for category development.

i. Strict Inclusion	X is a kind of Y
ii. Spatial	X is a place in Y, X is a part of Y
iii. Cause-effect	X is a result of Y, X is a cause of Y
iv. Rationale	X is a reason for doing Y
v. Location for action	X is a place for doing Y
vi. Function	X is used for Y
vii. Means-end	X is a way to do Y
viii. Sequence	X is a step/stage in Y
ix. Attribution	X is an attribute/characteristic of Y

Index cards with units were picked one by one and based on their content and the above list of semantic relationships, formed categories. The feel-alike or lookalike property of each new card along with the already analyzed cards were assessed on an intuitive level to either add it into an existing category or keep aside for a potential new category. All the cards that did not fall under any category were not discarded. Those cards were kept aside and labeled as miscellaneous. At this stage, memo writing for the already established categories began. The memo was about the theoretical properties of each category and the researcher's thoughts on the rules that would govern the inclusion of a unit into each category. The memo also included any surprising or contradictory findings and other findings and thoughts of the researcher.

As the interviews proceeded, any new units formed fell under categories based on what the researcher had identified for each category.

The rules of inclusion and properties of each category were written on an index card and were placed adjacent to that category. All categories were given names based on their properties. Existing units in each category were revisited and tested if it was justifiable to keep them in their category based on the rules developed by the researcher. If not, they were reviewed for any other existing category. If the unit still did not fit anywhere, it either went to the miscellaneous set of units or formed a new category with other units. At this point, revisions were made to the rules of inclusion for categories.

The entire process of categorization was repeated till all of the cards were exhausted. At this stage, the miscellaneous pile was sorted for one last time to see if any unit belonged to any category. If not, the card was then discarded. If the researcher was still be unsure of any units, these were kept as miscellaneous. The number of these cards were 5.7 percent of the total number of cards, which was in the safe range of 5 to 7 percent, in case of no inadequacies in the developed categories (Lincoln and Guba, 1985). The final categories were then checked to ensure that there was no overlap between any two categories, and there were no incomplete or unsatisfactory categories.

4. RESULTS

This section outlines the results of the data analysis. Interview results are organized under each research question of the study. The questions that were asked during the interview to get responses to the research questions are also added for reference. Results of the analysis of the floor plan of the department are discussed in the second part of this section.

Research Questions: What are the various social situations prevalent for SCI rehabilitation patients in the facilities? Where are those conducted?

Questions asked during the interview: What are the different kinds of social support and interaction opportunities that are available to the patients within the facility? What are the different spaces or areas in the facility where those are undertaken?

4.1 Interview Results

Each participant mentioned anywhere from one to four social situations that are available for SCI patients at WKHS. Collectively, those were activities in the leisure room, patient rooms, therapy rooms and the downstairs cafeteria. Eight out of ten participants indicated that the patients received social support and interaction opportunities in the leisure room, which was also called the common room or the recreation room. The

activities include playing board games or cards on the big conference table with their family, using the computer for internet, watching movies on the wall-mounted television, reading books or the newspaper, or having lunch with their family or friends.

According to six participants, patients spent most of their days in their rooms. Patients and their family members eat in the patient's rooms. Food is delivered to the patients by a staff member and the family will sometime be provided guest trays. If they are not provided with a guest tray, the family is welcome to bring food from outside and eat it with the patients. Additionally, there are no specific visiting hours in the rehab and a family member is allowed to stay with the patient all the time. Thus, some participants feel that patient rooms hold potential for quality patient-family interaction.

> *Family time really takes place more in their rooms than anywhere else*
>
> [INT7:262]

However, some caregivers perceived the current environment of the patient room to be not pleasant for the patients.

> *Whereas here, they tend to spend an awful lot of time in their room and that is a small room and I think especially spinal cord patients because they are normally young, it could be very depressing after a while.* [INT2:63]

> *Most of them stay in their rooms here, which are kind of small and claustrophobic.* [INT4: 133,134]

The therapy room or gym, which includes both the Occupational Therapy (OT) room and the Physical Therapy (PT) room were also thought of as successful socialization spots by six participants. Multiple patients go for therapy at the same time. They are allowed to take only one or two family members with them. Participants made it clear that the only reasons behind that restriction are the lack of space in therapy rooms and

that too many people around could be distracting for the patients during therapy. Additionally, the open layout of therapy rooms provide them with an opportunity to see and talk to each other before, during and after the therapy.

Two participants mentioned that the patients were allowed to sign out and go downstairs to the cafeteria for a meal with their family or friends. A couple of participants shared at the very beginning of their answers what they thought this would be a good way of providing for social support. According to both of them, a dining room for this patient group was missing at WKHS.

> *I would really want a nice big room for the patient, but also the meeting room that can be doubled as a dining kind of a facility, as well as a relaxation room where they can sit there and interact with other patients who are going through the same things.* [INT2:64]

> *In certain facilities, you are limited by the building, because there is not a dining room for patients, you know they eat in their rooms, the food is delivered to the rooms, so, it's really isolated.* [INT:292]

Research Questions: Who all are the participants in those social situations? What is the role of each participant?

Questions asked during the interview: Who all participate or are present for those activities? How accessible are these spaces for outsiders (free entry, limited entry, or restricted entry) ? Can visitors (volunteers) participate in any of those activities?

Patients and their families also like to go outside when the weather is nice.

The main participant of the leisure room activities is the patient, who is encouraged to utilize it for entertainment and socialization. Family and friends are welcomed to accompany them and participate in all activities, which include playing board games, watching movies, using the computer, reading and having lunch. Other allowed participants mentioned were the pastor or the minister from the church, people from the church and school mates. There used to be a schedule of group activities during the weekends that the staff used to invite all patients and their families for at the same time. They do not do that anymore.

When asked about the presence of a staff member during the activities a number of different responses were received. Three participants said that an occupational therapist or a nurse tech is always present in the leisure room when the patients are there, whether the patient is alone or accompanied by their family or another patient. This response was not in consensus with what other three participants shared. According to them, if patients were safe in the leisure room by themselves or with someone from their family, staff supervision was not necessarily required.

> *If they are safe, they just need to let the nurse know that they are coming down here, or if not, they get one of the techs to come here with them.* [INT4:176]

> *If they are more independent and safe with their family and they don't have a lot of issues, then I think its fine. If the patient has cognitive deficits, like a brain injury along with the spinal cord, then we will need to send a staff member with them.* [INT6: 256]

All but one participant (P2) stated that the access to the leisure room was free to everyone. A few also mentioned that although the purpose of the room was primarily to

be used by the patients and their visitors, sometimes people from outside (patients and their visitors from other departments) use it as well.

> *We try to keep it reserved for our rehab patients, just in case we need it and if someone else is here, then we can't really use it.* [INT4:186]

> *It really is for the use of our patients and their families, but I know some visitors do come in here.* [INT6:257]

Therapy rooms (OT and PT) at WKHS are essentially designed to incorporate therapists, their assistants and patients. They are the primary participants of the activities of the therapy rooms, which include patients exercising and therapists guiding and helping them. Therapy rooms are restricted areas and are not accessible to outsiders. However, one or two family members are allowed per patient when there is enough space to accommodate them.

> *When we are busy and we have 4 therapists with 2 patients, we have to kick the family members out because fire code won't let us have them in.* [INT4:154]

Family members are initially not incorporated in the activities, which means they just sit there and watch the patients exercising. They are however involved in the training during the latter part of the patient's stay in the rehab. This is done to ensure that the family member who will be taking care of the patient at home knows how to provide for the patient's needs. During that period, special family training sessions are conducted to teach the person responsible for the patient after discharge from inpatient rehab to take care of the patient.

> *Initially, we do not incorporate them as doing hands on. You know initially when we are doing the evaluation and the family does not do hands on until later on, because you do not really know where the patient is going to end up, as far as how much they can do for themselves. We do let them do things in the*

room, but not so much in therapy until closer to discharge day. [INT1:12, INT1:13]

Yes, when we do family training, we let them help sometimes, so they understand what's going on because they are usually the ones taking them home. [INT6: 229]

Each patient room at WKHS is occupied by just one patient and is subjected to limited entry. This implies that the participants of the activities taking place in the patient room is a patient, his/her family or friends and staff members who help the patients in their rooms. The interviewees mentioned serving the patients food and helping them with a trip to the bathroom as the common activities for which they are a part of in the patient rooms. They said that they try to involve the family member in charge with these activities too. Additionally, families and friends also eat with the patients and sleep on the couch in the patient room, if they want to. Thus, their role is to be with the patient and learn to help them with their needs.

All the participants who mentioned the cafeteria suggested that the patients can go there only when they are accompanied by a family member or a friend. None of them said anything about the requirement of the supervision by a staff member during the patient's trip to the cafeteria. One of them suggested that the patient has to learn to pay the cashier there.

When asked about participation of visitors or volunteers in the activities of the leisure room, therapy rooms and patient rooms all responses were unanimous that volunteers are not allowed at WKHS. Even medical students, who are not yet trained in taking care of these types of patients, are not allowed to participate or touch the patient. They can only observe.

We don't let people who aren't trained touch the patient. [INT4:165]

They can't help, they can only observe. We don't let untrained people help us, unless it's a family member and they are going home with the family [INT6:258, INT6:259]

Research Questions: When during the day/week are those activities conducted? What is the frequency?

Questions asked during the interview: What is the frequency of the occurrence of each activity?

There are no activities that are conducted outside because there is no outdoor space designed for any activity. People just like to go out to the entrance porch for some time during pleasant weather.

The leisure room is open for activities all day. Patients and their families can go there according to their will. There used to be a set schedule for some activities during the weekends, which were coordinated and conducted by nurse techs, but now they have stopped doing that. Thus, the rate and duration of occurrence of social activities in the leisure room during all days of the week are decided by each patient and their family and friends. Patients are not in therapy during the afternoon and after 5pm on weekdays. There is no therapy during the weekends. Thus, their availability to use the room would be for the most part during these time periods. Patients and their families are free to use the leisure room as many times a day as they want to. Some interviewees shared that the

room is sometimes locked during the evening because of the presence of limited staff at that time, but they always open it if someone requests.

Total therapy time on weekdays for each patient is three hours, which includes OT and PT. It was shared that some patients sometimes get speech therapy too, but no other detail about it was shared. The OT gym is used for 45 minutes in the morning and 45 minutes in the afternoon on all weekdays by each patient. The same is true for PT. There is no therapy in the gyms during the weekends. On weekends, sometimes the nurse staff or nurse tech conducts group therapy in the hallways right outside patient rooms. Activities in the gym change daily for each patient.

Trip to the cafeteria are only allowed to the patients during lunch hours. Patient room activities can occur whenever the patients are in their rooms during the day or night.

Research Questions: What are the physical characteristics of those spaces?
How are those spaces used?

Questions asked during the interview: Please explain the physical characteristics of those spaces. How do the people present there use the environment while they interact with each other?

Most of the participants described the leisure room as a small room. One interviewee guessed the dimensions of the room to be 8'x12' or 13'. There is a big conference table in the center of the room with chairs to sit on. A staff member brings a news-

paper everyday and keeps it on the conference table for everyone to read. There is a shelf in one corner of the room that has board games, books and several DVDs on it. Patients come in with their family to play the board games on the conference table. They also borrow books from the shelf to read in the leisure room. There is a TV mounted on the wall in another corner of the room. Patients and their family and friends watch TV together and sometimes use the DVDs from the shelf to watch movies on the TV.

Sometimes patients eat their lunch in the leisure room. There is a sink in the room too if someone needs to use it. A computer is provided in the room. Occupational therapists sometimes help the patients use the internet on it. Patients are free to use it to check their email anytime of the day. Walls, shelves and the furniture in the room are either grey or brown in color. There are windows on one wall with black shades and mini blinds on them. They get natural light through the windows and the view outside is of the other side of the building and its roof. Fluorescent lights are installed in different places in the ceiling, one of which is installed right above the television.

OT and PT gyms were described to have an open layout with curtains to cordon off certain areas, if patients needed privacy. Participants perceived the OT gym room as small and narrow with an occupant limit of 13 to 15 people.

> *Our OT gym is so narrow, that sometimes you can't even get through. So like, we would be doing an activity and something would happen, somebody would need to go to the bathroom, or there is an emergency, you have to like clear the hall, space out in order to get to that one patient, which is just not enough room. It's like a tin can.* [INT4:187, INT4:188]

Both the rooms are equipped with four mats for the patients to lie down and exercise on, a set of parallel bars and a set of four steps with handrails. OT also has a mat

that raises up and down, a treadmill with a harness that supports the patient's body while they practice to balance themselves, a ramp, a few restorative bikes and a table, which according to a participant, is not used. A kitchen is also a part of the OT gym, where they perform cooking activities with the patients and their families. Though the kitchen space is perceived to be a larger when compared to the rest of the gym, it is not big enough to conduct cooking activities with a group of patients.

The PT gym is also equipped with a sink and a cabinet along one wall which is used to store small equipment like weights. Since bathroom training is a part of PT, there is a bathroom with a toilet and a bathtub, which are used to train the patients.

Participants perceive patient rooms to be small as well, and according to one participant, even claustrophobic. They think that there is a lot of equipment that needs to be present in the patient room for SCI patients and the rooms at WKHS are not big enough to comfortably accommodate everything. Each patient room has a bathroom attached to it. If the patient has to go and come out of the bathroom, there are many things between that are in the way between the patient bed and bathroom door that have to be rearranged by the staff. There is a couch in each patient room, which is used by the patient's visitors (family and friends). The couch stretches out to form a bed, when needed.

The cafeteria is located downstairs. There is a door at the entrance of the cafeteria. Inside, there is a salad bar and people go around the big cafeteria with a tray in their hands and pick what they want to eat. When they are ready, they pay the cashier. None of the participants mentioned anything about wheelchair accessibility inside the cafete-

ria. No physical characteristics of the outdoors were described. One participant simply stated that there was nothing there.

Research Questions: How does the physical environment help accomplish the goals of the activities and actors?

Questions asked during the interview: What are the goals behind those activities and how do you think the physical environment helps in the accomplishment of those goals?

The primary focus of the activities that take place in the leisure room is to get the patients to socialize with each other and also bring their family and friends to participate with them in a space that is away from the patient rooms. Some of the responses when asked about the goal of the leisure room were as follows:

> *They can come down here and be kind of away from others so that they don't disturb other patients.* [INT7:264]

> J*ust getting them all together in a fun environment, getting them out together instead of being in the room all the time.* [INT10:388, INT10:393]

A computer, a TV, books, DVDs, board games and newspapers are available in the room at all times to provide the users an array of activities to choose from. There is no restriction on the number of people who can be in the leisure room at one time. It depends on the size of the room. A big conference table with comfortable chairs on wheels is provided to accommodate many people. This room is also used as a part of occupa-

tional therapy. Therapists and their assistants use the computer and the newspaper in the room with the patients as a part of their therapy. The staff tries to keep the door to the room open at all times in order to encourage patients and their families to come in and use the room whenever they want to.

Occupational therapy helps patients regain balance and strength. Physical therapy focuses on teaching the patients to dress themselves, taking a bath and going to the bathroom. Thus the goal of OT and PT gyms is to provide the patients with suitable environments for exercises. The physical environment is such that both gyms have an open layout, which gives the patients enough space to exercise and be in sight of the therapists even while they are helping other patients. All the equipment used for therapy is placed in the gym. Patients use the equipment as guided by the therapists. A large kitchen with a refrigerator, a oven and shelves is provided in the OT gym for kitchen training with the family. Similarly, a bathroom is a part of the PT gym, where the patients are taught how to bathe in the bathtub and use the toilet. There is also a cabinet along a wall for some equipment, which is pulled out when needed.

None of the participants stated any goals of the patient room. The cafeteria was perceived as a place where patients and their family could go and eat away from their rooms. In addition to that, they thought of cafeteria as a good place for patients to practice visiting and helping themselves in a public place on their wheelchairs.

> *Can they open the door to the cafeteria to get into the cafeteria, cause not all doors are automatic doors, you know can they maneuver around the salad bar, can they put a tray on their lap and figure out how to do things, pay the cashier, all those different things.* [INT1:42, INT1:43, INT1:44, INT1:45]

Research Questions: What do the experts perceive as the pros and cons of the physical environment? What are the barriers in the physical environment that impact social interaction?

Questions asked during the interview: Would you like to share a personal experience of yours when you thought about the role of the physical environment and how it affected the nature of patient social support and interaction?

Aspects of the physical environment that the participants considered as barriers for socialization were small spaces where it is harder for a group of people on wheel-chairs to get in, maneuver around and get out.

> *Just make sure that there is enough room. Everyone is in wheelchair here, so it's very hard. If someone is on the table and if someone wants to sit beside them, it's very hard: you have to go around the patient and set them up.* [INT4:171]

The staff also felt that the current leisure room was too far from the nurse station. If it was closer and they could see the patients in there, the staff would use the room more for group activities. Tables should be high enough so that patients on wheelchair are able to comfortably wheel in their legs under the table. The long conference table that is currently placed in the center of the leisure room is perceived as a hindrance in social interaction. The staff considers small round tables more successful in gathering people to talk to each other.

> *There needs to be a round table which promotes gathering and socialization.* [INT8:319]

> *A long rectangular table does not promote gathering or socialization.* [INT8:342]

The windows in the leisure room have blinds on them which are mostly closed. Even when the staff opens the blinds when the patients are in the room with their family and friends, all they see is the other part of the building and it's rooftop. Some patients express that they wished they could see good outside views. Participants conveyed that they think that a bigger leisure room with warm, visually stimulating contemporary interiors with posters of positive thinking would promote socialization among the users of the room. According to a participant, in order to make patients and their family members use the leisure room more often, it should be placed where it is easily visible and accessible, the opening should be wide, the TV should be switched on and the window blinds should be open to attract people to come and spend time inside. People should be able to see greenery outside the windows and not rooftops and chimneys.

Most of the participants wished there was a common dining room in the inpatient rehabilitation unit where patients could sit with their families to have meals together.

> *It will be nice if we had a dining hall, where they could have their meals with their family members and talk to other patients.* [INT5:224]

> *There is no dining area, you know thats where you typically get together and socialize.* [INT8:305]

> *There needs to be a nice dining/recreational room with chairs and tables. You need space for them to be able to park their chairs next to others. Families could sit on the couch and they could pull up to the table and sit.* [INT9:393]

Therapists perceive that outdoor space for therapy could be very beneficial for social interaction. According to them, people just do not stay inside their homes when they leave the rehab. Thus, an outdoor space should be designed where a group of pa-

tients could learn to walk on ramps, grass, sand and over steps and curbs. This would be very good for community integration training. A few participants also expressed that small spaces to gather along the hallway would also bring people together.

4.2 Setting Design Analysis Results

The Physical Medicine and Rehabilitation nursing unit at WKHS is located on the third floor of the main hospital at the Willis-Knighton Medical Center. The department has been included in the main hospital building so such that other departments within the building can be accessed for acute care, if needed. The nursing unit consists of 40 patient rooms (see Figure 10.), which are arranged in a linear fashion along a corridor. There are two centralized nurse stations and no decentralized nurse stations. Both nurse stations share support services.

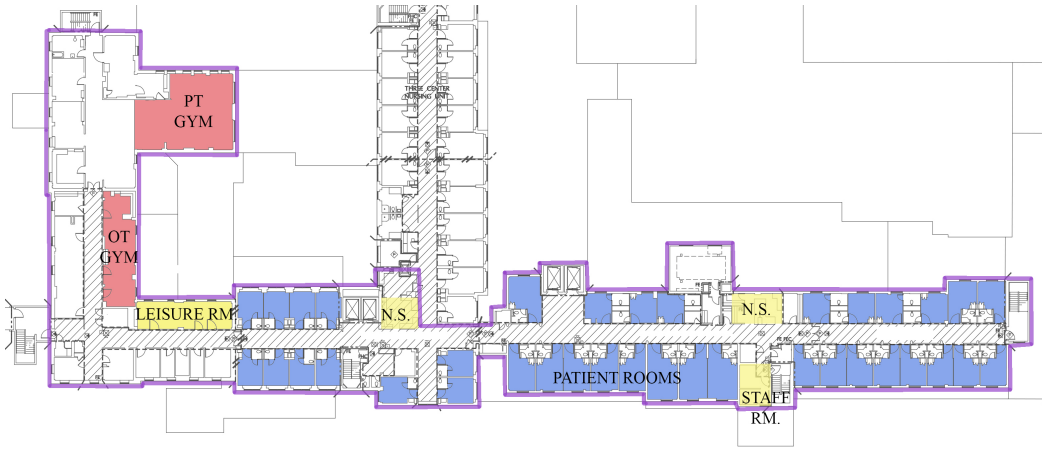

Figure 10. Physical Medicine & Rehabilitation Department, WKHS, Shreveport, LA
Source: TEG Architects LLC, Shreveport, LA

All patient rooms are single-patient rooms with the provision of bathroom and family zone in each room. Most of the rooms are designed to have an inboard bathroom

location and seven out of 40 patient rooms have a mid-board bathroom location. There are windows providing access to external views and natural light in all rooms. The leisure room and PT/OT gyms are not incorporated with the nursing units. They are located on the south end of the department and are not visible from any nurse station. A fully-equipped kitchen is a part of OT gym for home-environment learning training of the patients.

Space provided for the patient rooms, leisure room and home-environment learning kitchen is in accordance with the minimum required specified by VA guidelines. However, the patient bathroom, PT gym and OT gym are smaller than required by the guidelines (see Table 2.).

ROOM	SPACE REQUIRED VA GUIDELINES (NSF)	SPACE PROVIDED (NSF)
One-Bed SCI Patient Room	210	213
Patient Bathroom	120	36
Day Room/Lounge	400	470
Home Environment Learning Kitchen	167	160
Physical Therapy Treatment Clinic	1850	1160
Occupational Therapy	800	704

Table 2. Minimum space requirement as per VA guidelines vs space provided at WKHS in NSF

5. DISCUSSION

This study explored the perceptions and beliefs about the role of the healthcare environment in the nature of interaction between SCI patients with their family and friends in an inpatient rehabilitation setting among the caregivers. This chapter contains a discussion of the findings of this study and addresses time spent in room, impact of windows, patient's room size, bathroom size, dayroom design and PT/OT gyms.

5.1 Time Spent in Room

Findings revealed that the patients spent most of their days in their rooms. All patient rooms in the inpatient rehabilitation department at WKHS are single-patient rooms. Single-patient rooms have been seen to increase patient safety, reduce nosocomial infections and foster patient satisfaction (Chaudhary et. al., 2005). One family member is encouraged to stay in the patient room at all times, so all rooms are provided with a couch for their use. The couch can be pulled out to form a bed at night. There are no specific visiting hours and there is no restriction to the number of family and friends who can visit the patients in their rooms. Few participants perceived that family time occurred more in patient rooms than anywhere else in the unit. This means that family support is encouraged and provided for. Previous studies have indicated that providing for family support to patients through design of family areas in the patient rooms (e.g. Figure 11) reduces patient and family stress (Rashid, 2006) and increases patient satisfaction (Samuels, 2009), hence improving their overall health outcomes.

Figure 11. ICU patient room with family space by the window at Methodist Willowbrook Hospital, Houston, TX
Source: http://www.parsons.com/projects/Pages/mwb-hospital-expansion.aspx

5.2 Impact of Windows

It was found from the floor plan that all patient rooms in the rehab unit have windows. These windows were observed by the researcher during a visit to the unit. The windows are made up of clear glass panels and, hence, the potential of letting natural light inside the patient rooms. The researcher noticed that mini-blinds were closed most of the time making the rooms darker. The participants felt that the patient rooms were depressing for the patients, who spend 18 to 20 hours in their rooms everyday for their entire length of stay of 4 to 6 weeks. These findings were consistent with other studies.

Figure 12. Visual access to nature and natural light in patient room at Bridgeport Active Healthcare, Toronto, Canada
Source: http://news.nationalpost.com/2013/12/27/architects-use-patient-centred-design-to-take-fear-frustration-out-of-trip-to-the-hospital/

Beauchemin and Hays (1996) conducted a study to test the effect of bright vs dark patient rooms on patients with severe and refractory depression. The authors found that the length of stay of patients in the bright room (as shown in Figure 12) was much shorter in rooms with ample light as compared to those rooms without ample light. Patients also experienced less anxiety and depression. Other research has been done on visual access to nature and natural light in patient rooms that supports these results (e.g., Beauchemin, 1998; Walch et. al., 2005). Therefore we conclude that patients need to keep the window blinds in the patient rooms at WKHS open, so that the patients get access to natural light and views of nature through the window and that might reduce depression.

5.3 Patient Room Size

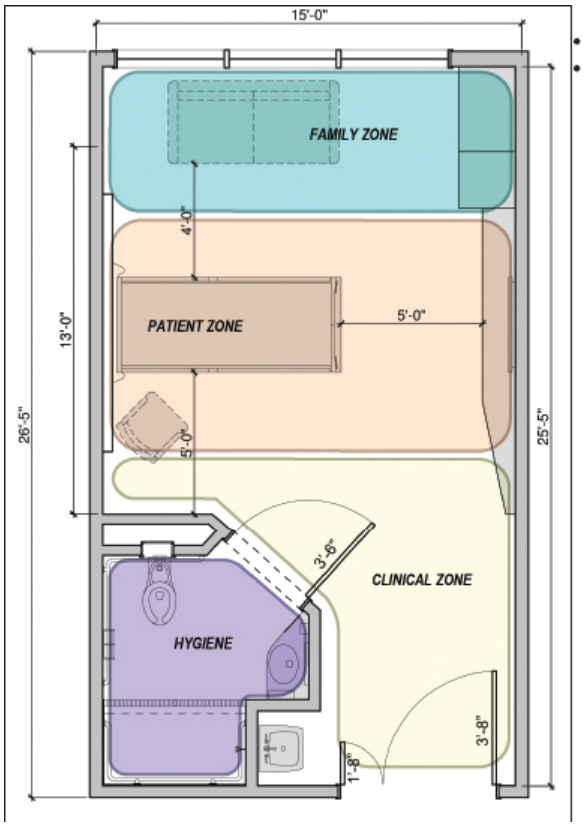

Figure 13. Space requirement for acuity-adaptable patient rooms with inboard toilet location. Image courtesy of HDR+Corgan
Source: http://www.healthcaredesignmagazine.com/article/using-evidence-based-strategies-design-safe-efficient-and-adaptable-patient-rooms?page=3

Atkinson, et. al. found through their study that in case of acuity adaptable patient rooms with family zone and outboard toilet location, the equipment and family space limits access to the bathroom more than when the patient toilet is inboard. The area of a patient room with inboard toilet has been specified to be 308 SF (Figure 13). Since toilets in patient rooms at WKHS are inboard, the location of the toilet is probably does not affect the patient's unobstructed access to it. If family-centered care is an objective of a facility, an area specified by Atkinson, et. al. (2010) might be more appropriate.

Staff at WKHS indicated that the patient rooms were too small for unobstructed operation of daily activities of the patients like moving between the toilet from the patient bed. The area of the rooms (213 SF) was later found by the researcher to be in accordance with the minimum required by the guidelines for the design of centers dedicated to SCI patients (210 SF). According to FGI guidelines, the minimum space requirement of a patient room in an inpatient rehabilitation unit is 140 SF. A family zone within the patient room is not accounted for by both VA an FGI guidelines.

5.4 Patient Bathroom Size

Participants in this study believed that patient bathrooms were too small for the patients to comfortably enter, exit and move inside on a wheelchair. They expressed that it was difficult for them to assist the patients inside the bathrooms because of the lack of space. At times they involved the family member in charge to help their patient use the toilet or take a shower because that family member will take care of the patient at home, after the patient is discharged. Since the bathrooms are small, approximately 36 sf, they cannot do that. This area is much less than the 120 sf minimum space requirement outlined for SCI patient bathrooms by VA.

5.5 Day Room/Leisure Room Design

Despite the expressed beliefs that the leisure room (day room) was the most used space for social interaction, participants were concerned about the functionality of the space. The main concern was the size and shape of the conference table, which is located in the center of the room. Caregivers felt that the rectangular shape of the big conference table did not facilitate quality interaction between the patients and family members and was difficult to use by patients in wheelchairs. Their perception was that multiple round tables would be more effective (as shown in Figure 14.). This belief is compatible with previous findings (e.g., Holahan, 1972; Sommer & Ross, 1958), which also suggest that small groups of comfortable movable furniture can lead to better social interaction in hospital day rooms and dining rooms.

Figure 14. Spacious day room with small groups of movable and wheelchair accessible furniture at Saturn Nursing & Rehabilitation Center, Charlotte, NC
Source: http://tours.tourfactory.com/tours/tour.asp? t=827336

5.6 PT and OT Gyms

The PT gym and OT gym were a concern of most of the participants. Patients are in therapy three hours a day on all weekdays. One and a half hours is spent in each area (PT and OT). Most of the participants perceived the PT and OT gyms had potential for high patient-family contact for three hours on all weekdays. There are 37 patient rooms in the rehab unit of WKHS. The minimum requirements for PT and OT gyms for SCI patient unit has been defined by VA as 1,850 sf. WKHS only provides 1,160 sf (see Table 3.).

Room	VA Guidelines Minimum NSF	FGI Guidelines Minimum NSF	Space provided at WKHS (NSF)
Physical Therapy Treatment Clinic	1850	Depends on program requirements	1160
Occupational Therapy	800	Depends on program requirements	704

Table 3. PT & OT gym space requirements vs current space at WKHS

The kitchen is fully equipped and is available to families to cook a meal and celebrate birthdays of patients. The kitchen however, cannot accommodate multiple families and patients at one time. Figure 15 demonstrates an example of a spacious PT gym. It was also found that while WKHS is still equipped with an Americans with Disability Act (ADA) kitchen and bathroom for training patients to function independently in a

in a home setting as a part of OT, for unknown reasons, they no longer have a complete apartment simulating a complete real home environment (as shown in Figure 16.).

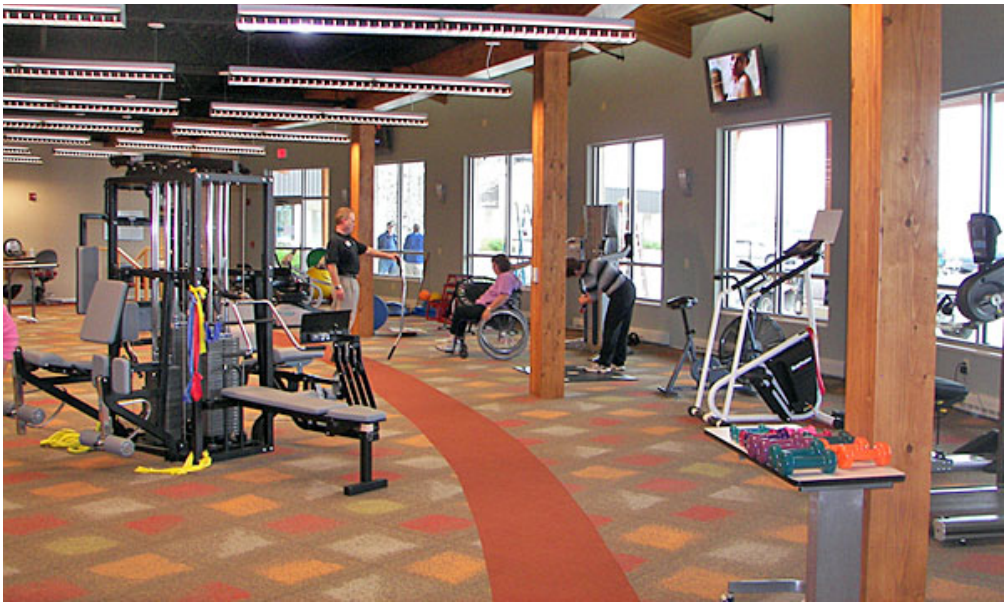

Figure 15. Spacious physical therapy gym at Community Hospital Rehabilitation McCook, Nebraska
Source: http://chmccook.org/about-us/virtual-tour/rehabilitation-center

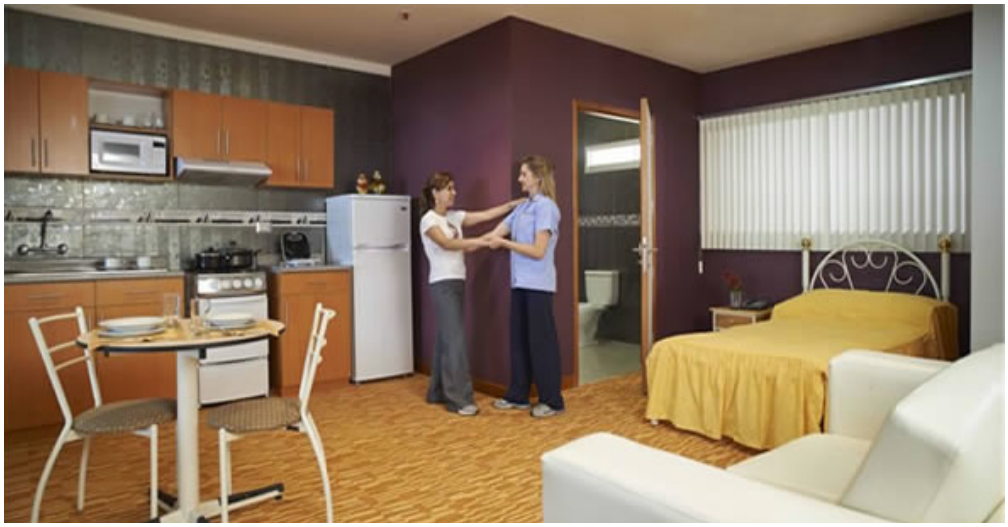

Figure 16. Mini apartment simulating real residence environment at San Pablo Hospital, San Borja, Lima Perú
Source: http://www.chacarilla.com.pe/en/specialties/occupational-therapy/

5.7 Summary

Spaces used for patient-family interaction at WKHS rehab unit emerged to be the patient room, leisure room, physical therapy gym, occupational therapy gym and the cafeteria. Participants felt that the most meaningful interactions took place in the patient room. It was also found that the quality of the physical environment that was most commonly perceived to negatively impact the nature of interaction between the patients and their family and friends was the undersized spaces.

6. CONCLUSIONS

This research study provides information regarding caregiver perceptions concerning the impact of the physical environment on patient-family interaction at WKHS. The use of open-ended interview questions enabled the participants to share their thoughts without the influence of the researcher's preconceived biases. Implications are that healthcare designers and researchers must study and provide adequate areas for patient rooms, patient toilets, PT and OT gyms and the common areas for SCIRP inpatient units for better patient-family interaction.

This section outlines a summary of the major findings of this study as well as the limitations of this research project. Additionally, this section contains recommendations for future healthcare design and research.

6.1 Review of Major Findings

All caregivers interviewed provided information about the effect of healthcare environment on the social interaction patterns of SCI patients in the inpatient rehabilitation unit at WKHS, Shreveport LA. Five categories emerged in terms of different kinds of spaces within the facility where interaction currently takes place: leisure room, patient room, physical therapy gym, occupational therapy gym and cafeteria. The major findings of this study are as follows:

1. Participants shared that patients spend most of their days in their rooms.

2. Family and friends are encouraged to visit the patients in their rooms at any time of the day. One family member is allowed to stay with the patient at all times. A family zone has been provided in the patient room to accommodate the family member during day or night.
3. Participants perceived the rooms to be too small to include family members in the daily activities of the patient room.
4. Although the participants want to incorporate family support in the patient toilet, there is not enough space to do that. The patient toilet area is less than the minimum required by VA guidelines for SCI patients, which affects the quality of their interaction.
5. One family member is encouraged to accompany the patients to the PT and OT gyms everyday of the week. Participants believed that even though they wanted to let the family member help with therapy during the later stages of the patient's stay at the rehab, they would sometimes have to ask the family member to leave the gym when there were too many patients.
6. The size of both the gyms was perceived to be small. In accordance to the VA guidelines for PT and OT areas for SCI patients, both gyms have less area than is required.
7. The leisure room was believed to provide social support opportunity according to the majority of participants.
8. There are various activities that are conducted in that room. There is provision of games, books, TV, cards, computer and newspaper for the patients and their family and friends to get indulged in together.

9. The big rectangular conference table placed in the center of the leisure room was believed to make it difficult for people to sit in small groups and have family time. It is hard for the patients on wheelchairs to maneuver around the small space around the table. This sometimes discourages patients and their families to use the room.
10. Families are allowed to take the patients to the cafeteria in order to spend quality time with them outside of the patient room. The main purpose of letting the patient go to the cafeteria was thought to be an opportunity for the patient to learn to access and use public places on the wheelchair.

6.2 Limitations of the Study

1. All ten interviews were taken on ten consecutive days because of the rules at WKHS. Due to this time constraint, the researcher was unable to transcribe and analyze the data from each interview before moving forward to the other interview. Data was transcribed and analyzed after all interviews were conducted.
2. Due to time and financial constraints, participants were selected based on convenience sampling.
3. Due to time constraint, the concerned population of this study, i.e. SCI rehab patients and their family and friends were not interviewed.
4. The presence of the tape recorder might have inhibited the participants.
5. The researcher was not able to learn the individual English dialect used by each interviewee in order to determine the usage of the words that meant the same to both parties. This might have affected the usage of words both while asking questions and

while transcribing the interviews. This might have distorted the interpretation of either the interviewee or the interviewer or both, resulting in probable skewed results.

6. Theoretical saturation with respect to emerging themes from data analysis was not achieved due to time limitations.

6.3 Recommendations for Future Research

There is still need for future investigations to address the topic of SCI patients in inpatient rehabilitation. This study was conducted in only one institute. Interviewing caregivers at multiple rehabilitation facilities could prove helpful. Also, since only one data collection method was used, future research needs to be conducted on the topic using different forms of methods, both qualitative and quantitative, in order to get a deeper understanding of the role of the healthcare environment in the way SCI patients interact with their family members while in rehab. This research design could also be taken forward until theoretical saturation is achieved using the open ended questionnaires. This could result in the development of research hypotheses for future research.

Efforts should be made to continue to look at the minimum space requirements of patient rooms in rehab with family zones for SCI patients. This could be done by first conducting a study to determine whether the minimum space requirement for rehabilitation nursing units developed by Facility Guidelines Institute (FGI) is appropriate for SCI patient rooms. Furthermore, more qualitative studies are needed to obtain richer data directly from patients and their family and friends.

6.4 Implications for Practice

1. Patient and caregiver needs should be first considered while providing for family space in patient rooms to ensure that the family zone does not interfere with the patient-caregiver activities within the patient room.
2. Enough space should be provided in the leisure room/day room for patients to comfortably maneuver their wheelchairs to reach anywhere within the room.
3. A large conference table in leisure room/day room should be avoided and multiple small tables should be provided to encourage patients and their family to form small independent groups for private conversations. The height of the tables should be such that patients can easily slide their wheelchairs under the table.
4. Therapy gyms should be designed to accommodate at least one family member per patient.
5. A dining room should be provided in an inpatient rehabilitation unit since majority of participants felt that it was necessary for quality patient-family interaction.
6. The leisure room/day room should be visible from nurse station so that they can ensure that the patients are safe while participating in activities of the leisure room with their family. Caregivers might organize daily group activities in the leisure room for the patients and their family and friends to participate in if the room is located near the nurse's station.
7. Space for family zone should be provided in addition to the minimum space requirement of SCI patient room specified by VA guidelines. This can be done by fol-

lowing the minimum required area specified by VA for long term care SCI patients (320 NSF) as shown in Figure 17.

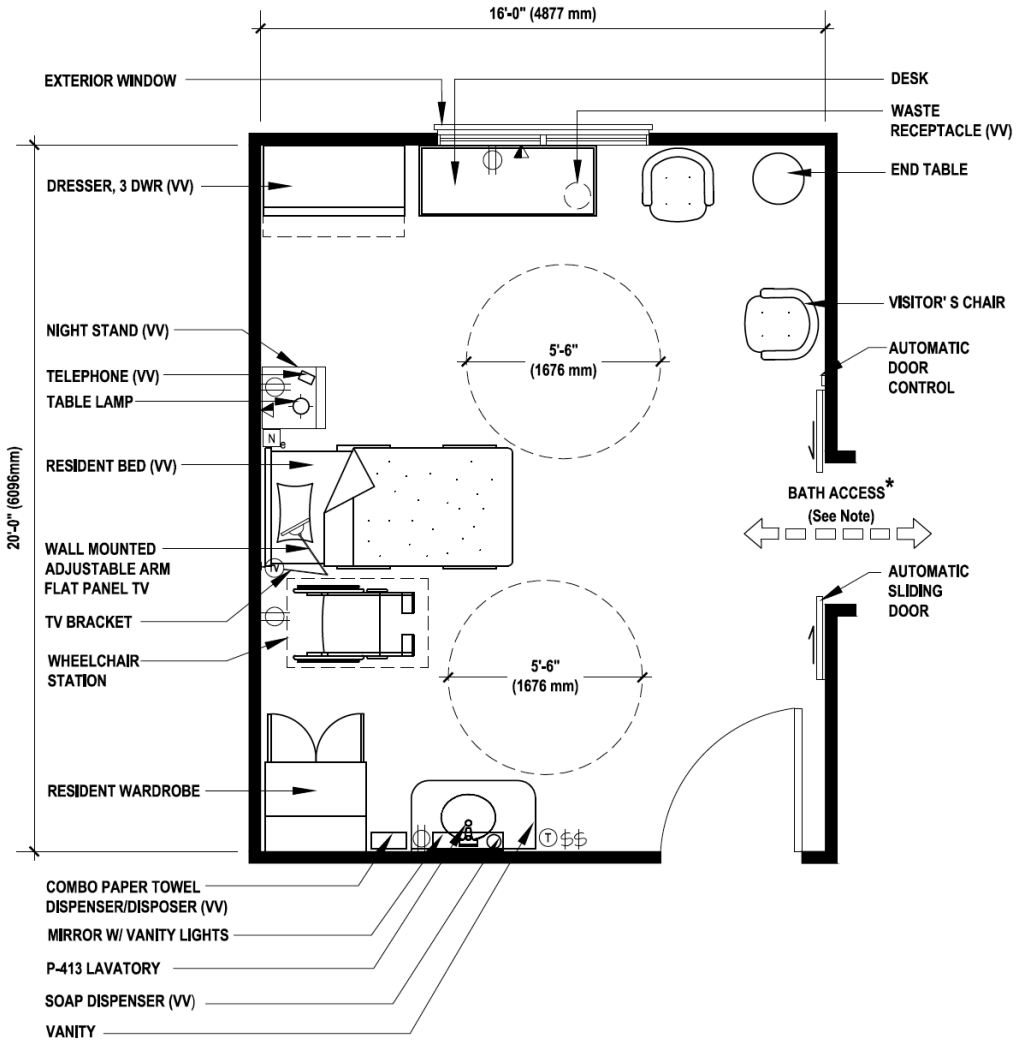

Figure 17. Long-term care one-bed SCI patient room floor plan
(Spinal Cord Injury/Disorders Center Design Guide 2011, Section 4, Pg.4-19)

6.5 Closing

Overall, the findings of this study confirm previous research studies and also add to the body of knowledge about the effects of the healthcare environment on interaction patterns of SCI patients in inpatient rehabilitation with their family and friends. Knowledge about the quality of interaction is enhanced by this research in particular. Qualitative research methods made it possible to get the detailed description of the caregiver's perspective and perceptions about the subject.

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APPENDIX A

INTERVIEW PROTOCOL

Purpose of the Interview

The main purpose of the interviews is to understand what the caregivers think, perceive and assume about the role of physical environment on the nature of patient social support and social interaction patterns. This will help in the determination of critical research topics and the development of new research questions and hypotheses pertaining to the physical environment of the concerned social situation for future research.

Interview Questions

1) What are the different kinds of social support and interaction opportunities that are available to the patients within the facility?

2) What are the different spaces or areas in the facility where those are undertaken?

3) What is the frequency of the occurrence of each activity?

4) Who participate or are present for those activities?

5) Do participants or activities change with the change of space?

6) Please explain the physical characteristics of those spaces.

7) What are the goals behind those activities and how do you think the physical environment helps in or deter the accomplishment of those goals?

8) How do the people present there use the physical environment while they interact with each other?

9) How accessible are these spaces for outsiders like volunteers, medical students etc. (free entry, limited entry or restricted entry)?

10) Can visitors participate in any of those activities? If yes, how (volunteering or learning new skills)?

11) Would you like to share a personal experience of yours when you thought about the role of the physical environment and how it affected the nature of patient social support and interaction?

APPENDIX B

TEXAS A&M UNIVERSITY HUMAN SUBJECTS PROTECTION PROGRAM

CONSENT FORM

Project Title: Impact of Physical Environment of a Rehabilitation Facility on the Social Support and Interaction patters of Spinal Cord Injury Patients and their Family and Friends: A Naturalistic Inquiry

You are invited to take part in a research study being conducted by Nidhi Setya, a researcher from Texas A&M University. **The information in this form is provided to help you decide whether or not to take part. If you decide to take part in the study, you will be asked to sign this consent form. If you decide you do not want to participate, there will be no penalty to you, and you will not lose any benefits you normally would have.**

Why Is This Study Being Done?

The purpose of this study is to understand the point of view of experts trained in providing care to spinal cord injury rehabilitation patients (SCIRPs) about social support and social interaction patterns between the patients and their family and friends as it relates to the physical environment.

Why Am I Being Asked To Be In This Study?

You are being asked to be in this study because you are an english speaking healthcare professional responsible for the care of Spinal Cord Injury patients within an Inpatient rehabilitation setting at WIllis Knighton Health Systems, Shreveport, Louisiana.

How Many People Will Be Asked To Be In This Study?

Ten people (participants) will be invited to participate in this study locally. Overall, a total of ten people will be invited at one study center.

What Are the Alternatives to being in this study?

No, the alternative to being in the study is not to participate.

What Will I Be Asked To Do In This Study?

You will be asked to answer to a few questions in detail. You will also be asked to use your specialized vocabulary throughout the interview session. This will be done to avoid the effect of the researcher's translation competence. Your participation in this study will last up to 60 minutes and includes on visit.

Will Photos, Video or Audio Recordings Be Made Of Me during the Study?

The researchers will make an audio recording during the study to avoid any translations done by the researcher of the words used by you. This will be done to ensure that any key terms in the vocabulary of your culture are not missed. If you do not give permission for the audio recording to be obtained, you cannot participate in this study.

Are There Any Risks To Me?

The things that you will be doing are no more risks than you would come across in everyday life.

Although the researchers have tried to avoid risks, you may feel that some questions that are asked of you will be stressful or upsetting. You do not have to answer anything you do not want to.

Will There Be Any Costs To Me?

Aside from your time, there are no costs for taking part in the study.

Will I Be Paid To Be In This Study?

You will not be paid for being in this study.

Will Information From This Study Be Kept Private?

The records of this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely and only Dr. Mardelle Shepley and Nidhi Setya will have access to the records.

Who may I Contact for More Information?

You may contact the Principal Investigator, Dr. Mardelle Shepley, D.Arch, to tell him/her about a concern or complaint about this research at 979-845-7009 or mshepley@arch.tamu.edu. You may also contact the Protocol Director, Nidhi Setya at 408-250-8499 or setya.nidhi@gmail.com.

For questions about your rights as a research participant; or if you have questions, complaints, or concerns about the research, you may call the Texas A&M University Human Subjects Protection Program office at (979) 458-4067 or irb@tamu.edu.

What if I Change My Mind About Participating?

This research is voluntary and you have the choice whether or not to be in this research study. You may decide to not begin or to stop participating at any time. If you choose not to be in this study or stop being in the study, there will be no effect on your relationship with Texas A&M University. Any new information discovered about the research will be provided to you. This information could affect your willingness to continue your participation.

STATEMENT OF CONSENT

I agree to be in this study and know that I am not giving up any legal rights by signing this form. The procedures, risks, and benefits have been explained to me, and my questions have been answered. I know that new information about this research study will be provided to me as it becomes available and that the researcher will tell me if I must be removed from the study. I can ask more questions if I want, A copy of this entire consent form will be given to me.

_____ _____

Participant's Signature Date

_____ _____

Printed Name Date

INVESTIGATOR'S AFFIDAVIT:

Either I have or my agent has carefully explained to the participant the nature of the above project. I hereby certify that to the best of my knowledge the person who signed this consent form was informed of the nature, demands, benefits, and risks involved in his/her participation.

_____ _____

Signature of Presenter Date

_____	_____
Printed Name	Date

APPENDIX C

INTERVIEW TRANSCRIPTS

Interview #1

NS: Let us start with talking about the different kinds of social interaction opportunities that are available to SCI patients in inpatient rehab within the facility.

P1: Okay. The patients get social interaction when they go to therapy because all their therapies are in common areas, whether they go to occupational therapy or physical therapy. We also have area that is a common area, where they can go and socialize, play games, use the internet, there is a computer in there, there is a TV in there, they can have their family there. As they get better, we also let them go downstairs at times, like if somebody is with them and they want to go downstairs to the cafeteria to eat. We let them sign up and let them go downstairs to eat.

NS: Okay. These therapy areas, are family members and friends allowed in these areas?

P1: Yes. To a limit, like they cannot take 10 people down there. They can take one or two people there. It depends on how full our census is. If there are a lot of patients, we have to limit how many people go down there with them. But typically, it is pretty much free that the family; we encourage the family and friends to go down there with them.

NS: When the family members go with them, are they allowed to help the patients with their therapy or they are just sitting on a side and just watching what the patient is doing?

P1: Initially, we do not incorporate them as doing hands on. You know initially when we are doing the evaluation and the family does not do hands on until later on, because you

do not really know where the patient is going to end up, as far as how much they can do for themselves. We do let them do things in the room, but not so much in therapy until closer to discharge day.

NS: So this means that, when they accompany them to therapy, they would just be watching them.

P1: Right and encouraging them.

NS: Okay. You also mentioned that there is another room where there is TV and a computer and games, where the patients go and they interact; is this the only other space except for therapy rooms and the cafeteria where the patients can sit together and....

P1: Ya we are an older facility, so we have, there are these common areas by the elevators, we have a conference room down there that we sometimes let people go into. But typically, the main places that the patients go to where they meet each other and can be accompanied by their family are the therapy areas and the room where the computer is, go downstairs. Sometimes they go hangout outside when the weather is nice or they go hangout in their rooms, because they get the larger rooms. We give them the larger rooms.

NS: Do the family members stay with them?

P1: We let them stay, if they choose to stay. You know if it is a young SCI, we encourage them to stay. Sometimes if they are older, we encourage them to go home. It kinda depends on what kinda shape the family is in. But we do encourage that someone should be with them as much as possible.

NS: I understand. Are there any particular time-slots allotted to patients for them to be out of their rooms and meet each other in these common areas or is it their free will?

P1: No. The gym areas are not free will, its when they go to therapy. The room down there with the TV and the internet and the games and things like that, yes, the time they can go down there is 24X7. It is open all the time. Going downstairs to the cafeteria, cafeteria is only open, I think from seven in the morning till I think eight at night. That is the only time the cafeteria is open.

NS: Okay. When they go down to the cafeteria, if they are going with their family member or friend, are they required to be accompanied by a staff member as well or they can have their own private time?

P1: No, they can have their own private time.

NS: Great! I understand that the activity room is open 24X7 and they can go there whenever they want to, but are there any particular dedicated activities that all patients have to come together for?

P1: No. We do not get a large volume of SCI patients like TIRR and different places like that and Baylor. So, you know we try to incorporate these patients on education, but normally, its kind of a one on one thing. You know, with their family or significant other.

NS: Who all participate in the activities in the conference area and the common room?

P1: Usually the Occupational therapist does it and on the weekends, the techs do it. Or the nursing staff. But during the week, its usually OT. We don't have a recreational therapist anymore.

NS: You said the OT or?

P1: The techs. They work in a nursing staff. My nursing techs, my rehab nurses. They are called nursing assistants. I think you would want to know the terminology. We call them nursing techs.

NS: How do you spell that?

P1: Techs. like a technologist but just techs.

NS: Are they a part of the nursing staff?

P1: They are Nursing assistants. These are people who do not have a college degree, that we have trained to do special things. That is why they are nursing assistants because they learn how to move these patients based on their diagnosis. How to fit for wheelchairs, fit for walkers. That kind of a thing.

NS: Okay. Sounds good. Do the activities change with time?

P1: As the patient's condition improves, yes they do. As they progress through rehab.

NS: Usually, what is the length of stay of these patients?

P1: Well if it is a paraplegic, probably about 3 to 4 weeks. If it a quadriplegic, probably about 4 to 6 weeks. Just depending on their resources.

NS: I am taking notes just to make sure we do not miss anything.

P1: You are fine. You are not bothering me. Go ahead.

NS: Thanks. What are the physical characteristics of the common area?

P1: There is a computer, there is a TV, there is a table which is elevated somewhat so they can roll their wheelchairs underneath it without any problem, there is a sink in there, and a cabinet, there is book shelves that has games and books on it, there is com-

puter games and DVDs and things like that. There is a window, couple of windows. Not very good scenery cause it is towards the inside of the hospital, but ya.

NS: But we get natural light?

P1: Yes, ma'am.

NS: If a patient is already there reading a book and another one comes in who wants to watch a movie, how do you manage that?

P1: Well, that is a problem usually. If that is an issue, so the person who is reading the book, sometimes you have to see what they can work out and if they cannot work it out time wise, then we make a schedule. Say you can have t this time and they can have it that time based on their therapy schedule.

NS: How many hours a day do patients get therapy usually?

P1: They have to have 3 hours of therapy a day. Bare minimum. To stay on this floor the way they were licensed.

NS: Everyday?

P1: Yes.

NS: Which includes Occupational therapy, physical therapy...

P1: Yes. you know if they are quad, sometimes they get speech therapy, but typically not. You know if they have a trait or something, but no, usually it is just OT and PT.

NS: Okay. Sometimes speech.

P1: Ya, very rarely.

NS: What do you think is the goal of providing the activity room and how do you think the goal is accomplished through the activities?

P1: I think the goal is that the patient doesn't sit in their room all the time. You know with spinal cord injury it is critical that they are integrated back into the society. Cause they have got to learn to live from the wheelchair and being at a wheelchair level is a lot different than standing up. So they have to learn how to maneuver the wheelchair, they have to learn how to interact with other people and interact in a environment that is typically not made for them. Everybody says 'this is handicap accessible'. There is a lot of degrees of handicap accessibility, which you know as an Architect that people put in ramps but sometimes the ramps are not to the code. They don't think things well as the way the door will open, you know where the grab bars are and things like that. So the purpose of it down there is just to get them to see what it is like to kinda get more....like even going downstairs, can they open the door to the cafeteria to get into the cafeteria, cause not all doors are automatic doors, you know can they maneuver around the salad bar, can they put a tray on their lap and figure out how to do things, pay the cashier, all those different things. Thats whats it is for. It is just to get them out of their room, get them more integrated to do different things.

NS: Do you see patients successfully doing that and fell that it is helpful?

P1: I find that it is critical. Personally, mu opinion is that spinal cord injury should go where there is lots of spinal cord injuries. Unfortunately, in this city, a lot of people who get spinal cord injury do not have the funding or the ability to do that. So, they are kinda what I say stuck here in the city of Shreveport, where there is not a high volume. I think they will do better if they go where there are large number of spinal cord injuries. Cause I think they learn from each other, they always see that there is somebody worse off than

them and I think it is a lot more beneficial to go to some place where there is just like an influx. Not that we can't take care of them. We can take care of them. I just think that it helps them mentally to go somewhere where there are lots of people.

NS: When the patients are in there with their family members and the use the exact term, the techs, is there anyone else who is present too?

P1: No. Not usually. I mean they can have their friends there or you know or whoever. On the weekends, usually there is more people who come in and out, to see you know to visit, so sometimes they might have friends down there, the pasture might be there, you know the minister, people from their church, or people from their school.

NS: So these spaces you would say have free entry or limited accessibility?

P1: We usually just let them have free will. Unless it gets to where you know, we had a football player, we had a guy who played football in Mansfield, Louisiana. I mean that was a lot of kinds who wanted to come visit him, so we just had to tell them that you know all 50 of you can't come today. We could not handle that, so we did kinda hold it back.

NS: But everybody is free to come in?

P1: Yes, unless you have 50 people come in, you know, as long as we can accommodate them.

NS: Can visitors who do not know the patients, participate in those activities, like volunteers?

P1: No, we don't do that here.

NS: Not even anyone from outside who has had training in taking care of these patients?

P1: No, we don't do that. We don't use any kind of volunteers. Everybody has to be cleared and credentialed through the hospital.

NS: Do you have a personal experience that you will like to share when you felt how important the physical environment was for these patients to foster social interaction. Any kind of a story, any kind of an experience.

P1: Well, I have kinda been on the other end of the stick. My first husband had a spinal cord injury. We were at TIRR. This is a long time ago, because back in the day, long time ago, they kept you in the hospital for a long time. He was in a hospital for a very long time at TIRR and we were in a ward where , it was a one big open ward and everybody had a spinal cord injury. Everybody, all the males were in one room. There were 13 people in the ward. They had little TVs that would swing over in front of this face to watch TV.

Being on the other side of the stick and seeing how it really works and feels being the, not the patient, but the family member of the patient, you know, so I have seen it both ways. That is why I ended up in rehab, it was him. You have to learn, you know the rehab center has the responsibility to teach you how to deal with accessibility and promote accessibility to learn how to deal with it when it is not accessible, in your mind, how are you going to conquer something. Like flying on an airplane, everybody talks about flying on an airplane with spinal cord injury. Airlines helps you to put the person on there, but when they took his wheelchair from us and they they put they wheelchair over all the battery that came with the motorized wheelchair. They did not think about it. So, when we landed in Miami, we had a big mess.

Just going somewhere and nit being able to get in somewhere and trying to problem solve, how do you cheat getting in somewhere. I think that is important. I think the way they are building the new rehab centers now, I have had the benefit of touring some of them in Dallas. I recently went to the Association of Rehab Nurses Conference in Charlotte and got the tour of the Carolina's rehab. We went into the building and they had only been building for less than a week, so we actually got to go in there and see how they had set it up and it was amazing how cool it was. Rooms were about the same size as we use but technology and in the common areas that they had, all the nurse's station were close and everything was at the wheelchair level, where they were eye to eye with the nurses. They had a common are where they could watch TV, right outside, you know the nurses could see them and they could interact and there was a place where there was ice and soft drinks, you know things like that. I think that is important, because I think that integrates them throughout the day. We don't have that, a common are where everybody eats lunch, we don't have that. Everybody eats in their rooms.

So I think that is important.

NS: Thank you very much for your input

P1: You are welcome.

Interview #2

NS: What kind of physical spaces do you think are available to spinal cord injury inpatient rehabilitation patients, where they can interact with other patients and their family members?

P2: Are you asking what I think is a nice way of doing it or how we do it here?

NS: We can talk about both.

P2: I personally think that there should be at least a kind of a big meeting room, in a kind of a setting where people can both come and relax and meet both family and patients. Where they can eat together too. This is important especially with spinal cords because part of trying to eat with especially you know with the weakness of the arms especially if they are quad or something, they feel very cut off and they need to be fed. I have been to places where they have programs where they feed them all together, there are special contractions on the wheelchair and the nurse just has to touch the elbow and it makes this thing move up and they can eat and feed themselves. They are not by themselves there. They are in a group. Everybody is in the same predicament.

Whereas here, they tend to spend an awful lot of time in their room and that is a small room and I think especially spinal cord patients because they are normally young, it could be very depressing after a while. Sometimes they want to be by themselves obviously, they don't want to speak or be with other people. Having to mix with other somehow gets them to interact more rather than being in their room just staring at the walls and just thinking of everything that has been lost, rather than being in an atmosphere where there are things happening, there are other maybe other spinal cord people who are a little bit further along. That can help them and cheer them up, encourage them.

So, you know if I was building a place, I would really want a nice big room for the patient, but also the meeting room that can be doubled as a dining kind of a facility, as well

as a relaxation room where they can sit there and interact with other patients who are going through the same things.

NS: How about this facility, do they have any socialization opportunities here?

P2: Mainly in the gym, but when they are down there, they are really concentrating on their work. You know they are in this part of the gym and they are exercising and they really can't interact socially. Only coming and going or when they are waiting to go to their therapy and they could be looking at the person exercising. We used to have recreation but they did away with that about 5 years ago because of money. So there is really no there place where they can just be and interact. After therapies they are back in their rooms just staring at the walls again or looking at TV, which I do not think is necessary. It is not conducive to getting better. I think you need the interaction. So, here we don't have a place where they can just go and just be socially. We used to at recreation. But i guess we still have that room, if have the staff and the time for just spinal cords and not for these other patients to take care of. We could maybe in the evening say that lets go down to this day room and maybe have a quiz game or maybe something, you know just interact, listen to the music or just discuss.

I noticed that one of the facilities I visited, they had a psychologist actually as a part of the team and she would take them outside, if they wanted to go outside for some fresh air. Just to be with them and chat with them, she would take them on outings. We do not do any outings now, we used to do outings. I think that is a very important part of and stage in their recovery. It will be nice to do that again. The community re-entering to a restaurant or to a cinema, where they can be used to being in that chair but feel safe

enough with people who can handle it and know how to react and begin to feel comfortable. How to maneuver the ramp, get in and out of a car, things like that. Also with the psychologist, having her around, she trying to watch the, the triggers she can tell, if someone is really getting depressed or really dealing with things. Things like that. I know we have social workers, but they are so busy with everything else. So always when we get spinal cords, once their therapy is over, they are in their rooms. Thats it. It's not good.

NS: Since you talked about movies, in m mind, I am getting an image of a media room.

P2: That would be good. A little media room where they could have a movie night. They can start to experiment on say let me try to eat some popcorn. Spinal cords, how they can pick up popcorn. I know it sounds really silly but thats part of being who they are. I know thats a part of OT, they teach them that. But it just seems lately, within the past 5 years or so, we are not taking the time to make about these little things like, making sure they can pick a straw to drink, we are like you know we will help you there because there are other things to do. Maybe because we are so busy with other things right now. I visit the rehab in Chicago, The Rehabilitation Institute, and there is where I saw so many things that were...My goodness they were so good. Like in their gym, a skeleton car type of thing, but they had it deliberately so that spinal cords or stroke patients also could practice getting in and out of the car in a safe environment of this big gym. I was like this is so good.

NS: You are right, rehabilitation is about preparing them for the world with what they have now.

P2: Yes, definitely yes.

NS: You mentioned that you still have a room where sometimes patients go to....

P2: Yeah, that is a small room, just a bit larger than this. I think what they do now is that they keep the news paper in there, maybe some games to play. You know spinal cord injury patients are usually young men, so after rethinking what types of activities we would do with them, you know some of them are like gang member, so they would not suddenly say 'oh yeah i want to go play some quiz game. They have never done anything like that, they do not know about all that stuff, so maybe like movies could be good because they can identify with that. Maybe painting, put the brushes in their hands and maybe painting. Just something.

NS: What are the physical characteristics of this room?

P2: The one we have or the one what I would like.

NS: We can talk about both.

P2: Okay, the one we have here is very small to me. If I would design a room, it would have lots of windows, lots of light and air. something to look upon, whether it would be greenery or the outside world and not chimneys and rooftops. But that is you know icing on the cake. The room has to be big, to be able to get wheelchairs in and out easily, tables high enough to get their legs under on wheelchairs. Basically a nice, bright airy room.

NS: What kinds of activities that come to your mind...

P2: The spinal cords if they are paraplegic, they can have their arms movement but if they are quad, then not. I would just think something with clay, where they could be a

stand and they would try to make a ball out of it. Like a spinning wheel that goes around and makes a ball. Even if they were quads, they could maneuver their arms. But i do not know that probably would not help them much to go out in the world but. Maybe even teaching patients to read in a group, because we have gang members who haven't had education, maybe working on the computer, they can use it with their mouth or eyes, some computers, with their eyes they can work them, that will be like teaching them a skill as well. On the computer they can learn to do a lot of stuff and travel while they on the computer. I think that will be a good thing to have a computer station. That could engage their family members and close friends.

NS: When the patients are interacting with their family members in the common area, are they accompanied by a staff member or they are given their own private time?

P2: Usually at first there is always a staff member because they need help in whatever its eating or dressing or using the bathroom. There comes a time when that care is given over more and more to family members. Thats when they get more time alone, if thats what they decide or they feel safe enough, confident enough. Thats what we aim for towards the family is that the caregiver gets to a point where they actually are doing everything for the patient instead of the nurse. Turning them, dressing them up, helping them out of the wheelchair. But that we find is a process, both of them come to that realization. I don't think, when they come in here you go straight away that 'you are going to be doing this', no they are not ready, neither people are ready. But before they leave here they certainly are they are taking care of them.

NS: When do you think that stage comes?

P2: It's different with different people. WHen they arrive here, they usually have gone through a lot of the grieving and they are learning to start to live with this. So, I would say, in my experience, it is about 3 to 4 weeks for family members, if they are really close, loving family members, are ready to 'I think I can do this'. At least 2 or 3 weeks.

NS: How long are these patients in inpatient rehab?

P2: Well they used to be here as long as it took, 2 months, 3 months or 6 months, but now they are not. They are here a month, 2 if they are lucky. I mean, they usually ask to start teaching them to be really independent from day one, like 'this is what you will be, whether it is independent from the wheelchair or with someone actually taking care of you. We have to start a little sooner than families are ready to do more hands on but even so maybe a week or two, maybe two weeks three weeks before we can say things like say they have to do in and out catheterization, we say 'well who is going to be doing this when they go home'. So the approach I think is very important.

NS: Do these common areas have free entry or restricted?

P2: They are normally restricted simply because not so much with spinal cords but with head injuries, they can get confused, they can get combative, sometimes when they are inside, they could just get up and walk out. So we used to have alarms on the doors, so that the alarms go off when the doors are open. We have taken those off but we don't have lot of head injuries now. For spinal cords, they can get angry and frustrated, they can just take off, you can never tell. So maybe for their safety, one would need maybe a coded door, family members would know the code to go in.

NS: Do you allow volunteers here?

P2: Here actually, people can come anytime day or night. There is an easy aspect to that but the downside of that is that lot of visitors would come, especially with the gang members, they would come in at 2 or 3 in the morning being noisy and crazy and waking them up. But on the other hand, if there was a code people might not visit that often. I don't know. I just know that at the research institute everything is coded. No one can just walk into the floor. You get out of the elevator and you have this glass door. You can't get in till someone opens it from the other side. Mainly for the safety of the patients. I don't know that is debatable. Certainly for head injury.

NS: Do you have a personal experience when you felt that the physical environment had a role in the socialization if these patients with their family and friends and with each another?

P2: No...I think I always think that things could be nicer and modern. For example the bed side table that go across, in order to make them wider, there is this lever that they have to push and crumbs can go down and it gets dirt, it looks so nasty. I think if they were made up of this type of stuff, that could just go over the bed that is wide anyway. Somewhere they can put a urinal, rather than on the bed or on the side next to the bed like a container on the side of the bed. The rooms need to be big, we need to have large rooms because of all the equipment.

NS: Are family members encouraged to stay with the patients in the room.

P2: They are. Basically, most of them want to anyway, because they really want to be with them all the time and that is really helpful because thats when you start teaching them to how to do things, they watch you do things. You show them you know if you are

going to get them out of bed, this is the way to do that type of a thing and you can incorporate them more in the training.

I know the Rehab Institute in Chicago, their philosophy is, if a family member stays, they should do everything. They will take the trash out, they will turn the patient, if the patient soils the bed, they will change the bed. So, it is known to that family member, if you are staying, you are staying to take care of the family member, you are not staying just to sleep on the couch and get free food type of thing, you know. You are staying to help. They say that that's the way they have always done it. I think there is someone to be said for that because what we find is that now in this area, you could have 3 or 4 members of family staying, with children and they will bring friends into the room and everything is just crazy, there is just stuff everywhere, it's untidy and it's not conducive to getting the patient in and out of the room. But in the Institute of Chicago, no, if you are staying, you are there for the patient and I think that is a good rule of thumb. Unless you know you are staying, unless you know if it is an old man or woman, they can't help much. Basically, if you are a family member and you are going to sleep on the couch, unless it is a child, then you are expected to help with the care, because you are going to be doing that anyway.

But I think the rooms need to be real nice and big. just rethink the way they have the drawers and the cabinets.

Interview #3

NS: I would first like to know about the different kinds of socialization opportunities that are available to spinal cord injury patients, while they are in here.

P3: We have a recreational room, where they can go. There is a television in there, there is a computer in there, they have games and books, you would need to make sure that they have those things and updated equipment for the therapist. If you are going to be designing, you might as well do the state of the art equipment for that, for OT and for PT.

NS: Is the recreational room the same room where they get their therapy?

P3: It is a room where they can go on the weekend, when they get tired of their room and they want to check their email or go pick out a book or whatever. It seems like that our patient population, the bad thing about getting the young spinal cord is that, most of the people that we get typically are older, so we don't have many young people at the same time. But it is always good for them to be with one another because you see someone who is worse of than you or better off than you, you know something to strive for.

NS: How often do the patients go to the recreational room?

P3: We have some patients who use it in their down time in the afternoon. A young person would probably want to use it more, because of the computer, because of the access to the internet and if there is another young person, they can go down there and play games and whatever. It does them goof to be down there, as far as their psyche. Because a lot of them come here and they turn off their lights and they shut down their blinds and they are embarrassed and they have to go through all the grieving process. They usually

have been here long enough when we get them up and get them to that point. So, we encourage them to get out of their rooms.

NS: Are they accompanied by anyone?

P3: It depends you know. We have had spinal cord patients who have been from out of town, so they have family who comes in on the weekends and some that have family that stays all the time. It just depends.

NS: But family members and friends are welcomed to be with them in that room?

P3: Yes, absolutely.

NS: So, when the patients are there with them, is there a staff member present too?

P3: Sometimes. Sometimes no. Our activity room or whatever you want to call it. Leisure room, we call it leisure room. It is way down the hall. It will be better if a leisure room could be closer to the nurse's station and we do let patients go but it's down the hall. It is good ways away. But, you know, it will be nicer to have the proximity of it closer to us.

NS: What do you think should be the physical characteristics of such social interaction rooms.

P3: Warm, friendly, visually stimulation.

NS: How do you think we can make it visually stimulation?

P3: Well you know there are certain colors that imbibe mood changes. I just think that young people are more visual, it helps they psyche because they are so visual, because they are the ones who are a part of the pop culture. I mean we are too to a degree but they are more so, so I think something that would be nice and, I mean it doesn't have to

be, it should be contemporary. It should be something that could get them stimulated, something that encourage them to think beyond their disability. Because of their age group. Because this has happened to them, their life is not over. So it should be something like, you know how you get these facebook things that are like positive, you know like posters of positive thinking, there is plenty of athletes that we can use, you know. Thats what I would want.

There was a guy who has no legs, who can't do anything, you know he can't drive a car, he can't ski, I think he can't fish, take his boat, you know they need to see things like that that would motivate them beyond the hospital. Because there is life out there waiting on them, whether they are aware of it yet or not.

NS: In addition to the leisure room that you have in this facility, what are the other kinds of spaces that you think should be provided to better social interaction possibilities?

P3: We used to have a room called, it was set up as a little apartment, where it had a kitchen, a bedroom, and it simulated how they are going to live in their homes, so that should be included in the plan. Like an apartment style mock up.

NS: Do you think that the family members should be encouraged to accompany them there?

P3: Oh absolutely, because they are going to be the ones that they go home with. So, they need to know about their transfers, they need to know about their functional limitations, they need to know how to handle situation like if this patient may fall, what would you do?, car transfers, you know those are things we already do now, but I think they

should be involved, if they are going to stay up here, you know, they should be included sooner. That has nothing to do with your design, I understand that.

NS: Its good to know this because if it is required, its good to know what has to be provided for.

P3: Yes, and spinal cords typically have a lot of equipment that we use. SO, their bathrooms will need to be a roll-in shower type thing, instead of a bathtub where you will have to get them in and out because they are typically harder to move.

NS: Any kind of spaces that you can think of where they usually talk to each other?

P3: A good place for them to interact with one another would be the leisure room. Or they can have their lunch in the leisure room, they can have their lunch together, cause typically in a hospital setting, in an acute setting, space is such an issue now, so you don't have a designated dining room to where your patients can go, so the room is about as good as we are going to get. You know the leisure room as opposed to having their lunch in their room, but that would be a space where you are going to say, hey we are going to use it for that kind of a social setting too for them.

NS: Okay. While the patients and their family are in the leisure room, do the patients need any help from the staff? Do staff members try to be there at that time?

P3: It depends. Then again, the proximity of that room from the nurse's station is an issue. So if they can't go down there and handle themselves, we typically don't allow them to go, unless there is a staff member available and we can't always promise them

that a staff member will be available. So, that's why if we had it up here or near the station or whatever, that will be ideally the best way to do that.

NS: Do these rooms have limited entry as far as outsiders are concerned?

P3: We encourage family to come in and be with the patient.

NS: How about volunteers?

P3: That would be good, we have never had that but that would be nice. A lot of patients would want them to read to them or talk to them. A lot of time patients act to be depended, when we are trying to do something for them, for eg. patients who can fill out their own menus. That is something you should allow them to do on their own to give them back their independence. I mean it is a small thing but it's a part of that what are you willing to do to get yourself out of here kind of a thing. You know a lot of times a volunteer would want to know if a patient would have any kind of a swallowing difficulty you know or if you give them water if they ask for it and they choke you know. We have had a lot of spinal cords who have been on trachs (tracheotomy) and they have dietary restrictions. So, they would need to know they can't just do anything. They will have to check with the nurse before that.

NS: Have you ever been in a situation where you felt that the physical environment played a critical role in the socialization patterns of these patients?

P3: I can tell you what I am not happy with. Can I do that?

NS: Absolutely.

P3: We had a remodeling done here last year and we had a member of the engineer, I think he is an engineer, I am not sure, he had a family member here, and can't remember

if it was mom or dad. We used to only have curtains over the bathroom, shower curtains you know the little plastic ones, which doesn't allow for a whole lot of privacy, however, when they did a remodel, they put doors, that you can open and close. And guess what, many times you have to rearrange the room, you know why, because you have to allow space for that door to swing open and close. A lot of these rooms are very very small. So, I had to rearrange the room every time the patient wants to go to the bathroom. You know you have only got this much space, you have your patient sitting here, there is your bed, and you are trying to open the door to the bathroom and guess what, can't do it without rearranging the whole place. So, when you design a facility, make sure that you either have pocket doors or you allow plenty of space, and space is going to be a big issue because they will try to get away with a little space for a patient room as they possibly can. A lot of time they are working with the restrains of the facility that they already have and that is a big barrier. That happened in Bossier because they had a remodel done in the day surgery department. So, and I was a part of that and it doesn't matter how much of a good plan they come up with, a lot of times they don't allow you because of the cost or whatever you know, you don't ever see that....my point is, that was a very foolish idea, because it's hard on the patient, it's hard on the staff and all you have created is another barrier for the patient.

NS: Thank you.

Interview #4

NS: Since you have been taking care of spinal cord injury patients in an inpatient rehab setting for a few years now, what different kinds of spaces do you think are available to these patients to use to spend time with their family and friends?

P4: Here at WIllis Knighton, there is not really like one specific room that they go to. Most of them stay in their rooms here, which are kind of small and claustrophobic. We do have this leisure room in here, where they can come and watch TV, work on the computer, we have games such as dominoes, bingo and all that.

The other facilities have been in, they have had specific rooms for that, but here we just don't have the space.

NS: What kind of rooms have you seen in other facilities?

P4: I have seen game rooms, I have seen you know book rooms, or just bigger leisure rooms with different things in it where they can go to and play games. I have seen pool tables and air hockey tables. Things like that.

NS: Have you worked in those facilities where you have seen this?

P4: I did, 3 months rotation at one in Georgia.

NS: While the patients are in any of there common rooms, are they accompanied by their family members or friends?

P4: Sometimes, but sometimes they just go by themselves. Though it is better if they have someone with them, just in case of accidents or something. And also you mean, who wants to go do something by themselves.

NS: So, this means that family and friends are most welcomed to be with the patients there?

P4: Yes, we never discourage family or friends from coming. For therapy, we don't need 20 people, it should be just one family member. But, if it is a leisure room, if they want to come, like in this leisure room if they want to come to watch TV or computer, the more the merrier.

NS: Do patients get to talk to each other in the leisure room?

P4: Yes. Especially during therapy, we usually have two patients in therapy at once, so they can always interact then. A lot of them will strike up conversations in the hallway or in their rooms or they will come down here at the same time and do something.

NS: When someone from the family comes down to therapy with the patient, are they allowed to participate or they should just watch and provide moral support?

P4: It depends. We do like them to be interactive because they are whom they are going home with. They need to know how to safely stand them up and how to make feeding easier. So, if they want to be engage, we will say to them, 'Hey, Ms. so and so, come over here and throw this ball to your husband' or 'Hey, can you push this chair'. We try to get them involved. Sometimes it doesn't work. Sometimes family members who are close are very scared. We do what we can to get them involved.

NS: Are therapy rooms designed to accommodate family members?

P4: (slight laugh) Sometimes. Our OT gym is quite small, it's very narrow and we only have like 13 or 15 limit of people. When we are busy and we have 4 therapists with 2 patients, we have to kick the family members out because fire code won't let us have them in. Our space is very small, we don't have enough space for all the family members and us and the patients.

NS: What kind of activity goes on in OT?

P4: We mainly focus in the gym on like balance, training and strengthening. In PT we focus more on dressing, bathing, going to the bathroom. All the daily tasks that you would do that you kind of take for granted, that's what we focus on. I don't care if they walk 500 ft but if they get to a kitchen and they don't know what they have to do there, or they can go to the bathroom bet they can't pull their pants down, then to me even what is the point of even getting there. So, everything that we do goes back to function. So, we do balance in order to ensure safety in the bath tub, we do activities to help them put their shoes on. So, everything relates all the way back to function.

NS: Does that mean that you have mock bathrooms and...?

P4: Yes, we do have a room, it's not in our OT gym but it's in the Physical therapy gym, that's where the bathroom is. There is a bathtub. We have a kitchen in the OT gym, there is a fridge and oven in it that we do cooking activities in.

NS: Do two or more patients get therapy in the kitchen mock up together?

P4: Yes, we don't do it a lot because it is not safe if we have 2 patients but their family does come in and they have helped us before. Our kitchen area is actually bigger than the other treatment areas. We would like to do a cooking group with multiple patients, its more fun, but we do not have enough space.

NS: How frequently do patients come in for therapy?

P4: We (Occupational therapists) see the patients twice a day for 45 minutes each, eve-ryday, Monday to Friday. So, they get and hour and a half of OT and an hour and a half of Physical Therapy. So, it's like 3 hours all together.

NS: Is physical therapy also divided into 2 times a day?

P4: Yes. And if they have speech, that's on top of other therapies.

NS: Who all are present during therapies?

P4: Patient, therapists and if they accompanied by a family member or a friend.

NS: That's all?

P4: Yes.

NS: Do you allow volunteers to participate?

P4: We don't let people who aren't trained touch the patient. So, volunteer like we have an observation student, they are only allowed from WIllis Knighton's policy just kinda be there and observe. I have had them help throw a ball but technical that's not allowed. It's just for safety. If something happens and these people are not licensed.

NS: Do you have a vision for how physical spaces should be designed for better socialization opportunities for spinal cord injury patients in inpatient rehab?

P4: Yes. I would love for this leisure room to be bigger. When we open these windows we stare at another building, and it's very ugly, you can't even see the sky. Ao, if the patients are in here for a long time, they are like 'Oh, I wish I could see outside'. There is a little bit of an outside area but it's nothing I mean there is nothing there. SOme outside place would be nicer on nice days, if we could do therapy outside, that will be nice.

NS: Anything else that you can think of?

P4: Yeah, I guess just make sure that is enough room. Everyone is in a wheelchair here, so it's very hard. If someone in on the table and is someone wants to sit besides them, its very hard, you have to go around the patient and set them up. These hospitals are so drab

(laughter), like any kind of colors except for white and grey and brown would be wonderful, cause you get tired of looking at grey walls everyday. Yeah, so just the space is the bigger issue, like you have to have enough space. We are limited here because this hospital is so old, that there is not really not any more space to grow. But yeah, that would be nice.

NS: Okay. Great! What is the goal of having this leisure room?

P4: This is really just to get the patients, you know, a part of OT is also leisure, like what do you do in your free time. If someone is a spinal cord and they can't move their hands and they used to knit, you want to foster, even if they can't do what they once did, it's still something meaningful for them. Also to get their mind of the fact that they are in a hospital. So, just to come in, interact, play a game or two, read the paper, feel normal instead of kinda you have to do this this and this, kind of do your own thing.

NS: How long can they stay here?

P4: However long they would want to. If they are safe, they just need to let the nurse know that they are coming down here, and if not, they get one of the techs to come here with them. The door is always open, or if it is not, the nurses have the key, but we don't limit access to this room.

NS: How would you say that the goals of having the leisure room are accomplished?

P4: They are probably not used as much as it needs to be, just because sometimes that's not our main focus. You know, like it's nice to come here and do a leisure activity, but it's kind of like what is a little more important, they being able to go to the bathroom by themselves or playing cards. So, we do try, but it's kind of like you have to balance.

NS: Are they encouraged to visit this room in groups?

P4: On the weekends, I don't know if they still do it but they used to have groups every Saturday and Sunday, they would announce that 'Bingo in 20 min, if you want to come, call out'. I don't know if it's still done, it was done a couple of months ago, I guess we should check, but, we should try. They do group therapies in the hallways during the weekends, like the arm group and the leg group, that the patients can interact with.

NS: What's that about?

P4: It's just restorative like the techs will do arm therapy and leg exercises. Especially to the ones that don't have therapy on the weekends, just to give them something to do and to keep their strength up.

NS: Where do they get together for this?

P4: They would do it in the hall or by their rooms.

NS: What percentage of the patient population at a time do you think use this room for socialization purposes?

P4: Kinda like 50%. Half of what we usually have. Depends on the patient population at that time.

NS: Okay. Who all are present during the activities in the leisure room?

P4: The nurses aids (What is this?) will come and if their family is here they will come down with them too. We have to have a staff member down here, just for safety. So, a WIllis Knighton staff member and if they have family or friends visiting, they will come.

NS: What does nurse's aid mean?

P4: Oh the tech. It's a CNA. They transfer the patient, feeding in the morning, get them dressed, like if they call out when they want to go to the bathroom, the nurse's tech or aid will come help them in there.

NS: What's the full form of CNA?

P4: Certified Nursing Assistant. I believe that's what they are called here. That's what they are everywhere. They have to have a license as well.

NS: What would you say about the accessibility of this room? Free or limited?

P4: Free. We usually try to limit it to rehab patients, sometimes family members come in here from other units. We don't really care but we try to kind of try to keep it reserved for our rehab patients, just in case we need it and if someone else is in here, then we can't really use it. Anyway, we don't care.

NS: Can you think of an experience when you felt that the physical environment was improved the quality of social interaction with respect to spinal cord injury patients or when it was detrimental?

P4: Well, our room, our OT gym is so narrow, that sometimes you can't even get through. So like, we would be doing an activity and something would happen, somebody would need to go to the bathroom, or there is an emergency, you have to like clear the hall, space out in order to get to that one patient, which is just not enough room. It's like a tin can.

NS: Do you mean that unrestricted social interaction is very difficult there because of the small space?

P4: Yes, because once we put a patient in a place, they just can't move without us moving them. If we are busy, like if we have 20 patients in rehab and we are double booked all day, once w e put them somewhere, they really can't go somewhere else. There is not enough space to maneuver. Accessibility is not the best.

NS: Okay. Thank you very much.

P4: You're welcome.

Interview #5

NS: What are the various kinds of social interaction opportunities that are available to spinal cord injury patients here?

P5: Social interaction....are you speaking of with staff?

NS: With family members and friends and within themselves.

P5: We have what we call a community reintegration outing where the therapy staff accompany the patients and we also invite family members to an outing say like a restaurant or to the mall and usually we leave it up to the patient to decide where they want to go. So, not only it is a chance for them to interact with the staff but also with others in the community. If you are going to the restaurant, you are going to talk to you know the waitress or some other patrons and everything, and so thats one opportunity, that outing. Also, we usually do a home evaluation, where we take the patients and usually family is present, sometimes other relatives are there, friends, because they know the patient is coming to the home. But we are there to assess the home, make sure it is accessible to the patient. We look at the bedroom, the bathroom, the doorway, do they have steps, you

know that kind of thing, but it is interesting how sometimes this kind of a...they have a group of people there to welcome them, even if it for a few hours. and because they have to come back to the hospital. So, that is another opportunity for them to interact with family and friends.

NS: How about when they are inside the facility?

P5: As far as here, I know the therapy sessions, patients are in a big room and while they are sitting there maybe doing exercise, walking or whatever, you will notice that they greet each other and just carry the conversation, just sit next to each other doing exercising. I kinda notice that.

This is our leisure room and patients come down here to play dominos, watch television and to use the computer. Sometimes an Occupational therapist would have 2 or 3 people here, sometimes family member would come in too to play dominoes, just have a discussion or play cards or something like that. I have noticed sometimes patients would visit each other in their rooms. When you are here for 3 to 4 weeks, you get to know some of the other patients. I noticed that they get to know their names and you know visit with them.

NS: Is there a time limitation to how long they can stay in another patient's room?

P5: No. absolutely not. Usually they don't stay long, they have a brief conversation. Usually our therapy sessions are 3 hours per day, so they kind of see the same people very often and spinal cords may be here from 3 weeks to 4 weeks, depending on the severity and how they are progressing in the therapy.

NS: When they come here with their family members, are they accompanied by a staff member?

P5: There is a staff member here, an Occupational therapist or sometimes the Occupational therapy tech are in here with the patients.

NS: What are Occupational Therapy techs? How are they different from Occupational therapists?

P5: The therapists are actually certified and licensed. The tech is sort of like an assistant. They are really not doing any therapy, they are helping the therapists and they do some-things for the patients too. They may help them to the restroom, they may monitor them when they are doing some type of exercise. The therapists are the ones who are responsible for the therapy, the techs are there just to assist them.

NS: So, they have enough experience to assist the patients with anything they might need while in here?

P5: Oh yeah, absolutely. We call them Rehab Techs, but they are actually CNAs too.

NS: Does any other place come to your mind other than the leisure room for social activities?

P5: No.

NS: Where do they eat?

P5: In their rooms. Yeah, we don't have a separate dining hall like some of these nursing facilities, they may have a dining room, we don't, they just eat in their rooms.

NS: You have shared with me your thoughts about the opportunities that are available here. Can you think of something that is not at Willis Knighton and you think will be a good idea to provide?

P5: Yes, support groups. There are support groups in the community for spinal cord patients. I can't think right now where they meet but I know there is one going on. Not only they are there for support but also they have leisure activities, they do things together, you know besides meet and talk.

NS: What are the physical characteristics of those spaces?

P5: They definitely have to be handicap accessible, you know because they are going to be in wheelchair. I don't know, I think that's the main thing, the accessibility. I would imagine if they have some kind of sporting event or teams or something like that, they will have to make sure that it's accessible for that population. You know, like if they are playing basket ball, wheelchair basket ball, you know, or something like that.

NS: How frequently do patients visit the leisure room with their family?

P5: I don't know, the Occupational therapists have activities set up, and I don't know usually how much time they spend in here. I just pass the room and I see someone on the computer, I see the dominos going, reading, they have newspaper, they have book, you know. I just notice them passing by. Sometimes if a patient is here alone, I just come in to sit and talk to them about whatever I need to speak to them about, you know sometimes it's about going back home or setting up everything there. So, I just sit at the table and talk with them. So, I am just usually passing by.

NS: Are family and friends allowed to get themselves food to eat with the patients in their room?

P5: Oh definitely! Oh yeah! They can go down to the cafeteria and get lunch. Sometimes they bring them lunch, if they are not on a special diet, they bring them lunch. SOmetimes we get complaints about hospital food you know, so the family member make sure they get something to eat from outside. Usually that's when I usually visit them.

NS: What do you think is the goal behind the common socialization spaces?

P5: I think that it is a means of support for them. Knowing that they are not alone. Some patients may not have that support at home, you know they may not have someone at home to talk to. So, just being with someone and having someone to talk to probably help in their recovery. It gives them some motivation. We have seen this before, not only with spinal cord injury patients motivating other patients, 'you can do it, common', you know. It's good to see that sometimes, they cheer them on when they take a step, you know.

NS: How to you think this goal is accomplished by the physical characteristics of the space?

P5: Well, in therapy, the space is very open, you can't help but see someone and talk to someone. We do have curtains to cordon off certain areas, for some therapies where we really want the patient to concentrate. But other than that I think it is a good thing to have it so open, so patients can see other patients striving to get better and just to speak to them and smile you know. They don't feel so secluded.

NS: How accessible in the leisure room and therapy rooms for family and friends?

P5: Oh very accessible. We allow them to come down to therapy as long as they don't interfere. We don't allow a whole bunch of folks, because it becomes a distraction for other patients.

NS: Did you ever felt that in a particular situation, the physical environment played a role in the nature of social interaction of these patients with their family and friends? Would you like to share that experience?

P5: Sometimes I wish that our therapy gym was bigger, and this is when our census is high.

NS: Okay, anything else?

P5: I can't think of anything.

NS: That's okay.

P5: But I think if we had, with the type of patients that we have, it will be nice if we had a dining hall, where they could have their meals with their family members and talk to other patients. That will be nice.

NS: Thank you.

P5: You're welcome. I hope it helps.

Interview #6

NS: What kind of social interaction opportunities are available for spinal cord rehabilitation patients when they are in inpatient rehabilitation?

P6: They come down to the gym, there are other patients there too, so they can interact with the other patients. Kind of depends on their age. Most of the patients that we have

are older, and our spinal cord injury patients are young. They don't interact with the older patients that much but it just varies and depends on the patient's personality. So, really the only social interaction they have is down there and when they go to their room, they can interact if they want to. Then we have this room, which is the leisure room, which some patients utilize some don't in order to interact.

NS: Are the patients accompanied by their family members to therapy?

P6: The family members can come if they want to. We usually say that it is restricted to one member from the family but really we let them come if they want to as long as they are not interrupting therapy and be a hindrance to the patient.

NS: Can they help the patient in therapy?

P6: Yes, when we do family training, we let them help sometimes, so that they understand what's going on because they are usually the ones taking them home.

NS: If the patient is too critical to take help from the family in therapy, what does the family do in the gym?

P6: Just stay there and watch. They might do a little stuff that the patients would like them do for them. Other than that, usually just sitting and keeping them company.

NS: How about inside patient rooms?

P6: I mean there are families allowed anytime. there is not usually a visiting hour or so. It really just depends on how much interaction they want. If the patient does not want any family or friend, they will just stick a note on the door that says ' No visitation' or 'Check with the nurse' or whatever. But yeah, we don't restrict them on who are allowed to come in. The family is allowed to stay the night in their room with them.

NS: Is the family also allowed to eat with them in their rooms?

P6: Yeah. Sometimes we have guest trays, sometimes we don't, but yeah. They can go downstairs to the cafeteria and bring something up to eat with them.

NS: How about the leisure room?

P6: The OTs usually use this room.

NS: What is this room used for and how often do the patients come in here?

P6: I don't know how often they come in after therapy hours. Some people just come here to use the computer for the internet purposes. Usually by the time they get back to their rooms from therapy, they are tired, they just want to relax. They eat dinner by 5 and a lot of them get in their bed.

NS: Usually what time of the day do patients come in here.

P6: I guess whenever they want to. This is more of an OT thing. They have books in here and they can do whatever they want. Usually we get the tech to bring them down here. They are not by themselves.

NS: So it doesn't matter now long they want to stay here?

P6: No, they can come whenever they want for how much ever long.

NS: Can they be here alone with their family and friends?

P6: I think so, I mean I don't know how they do it at nights. We are always up and down these halls, just in case if something happens. So, maybe in the evening time they don't because the halls are empty, there is nobody down here. So, if there is an emergency, they are left here by themselves.

NS: Who all participates in therapy?

P6: Patient and the therapists. If we have family training, the family participates.

NS: Please explain the physical characteristics of the gym.

P6: We have 4 mats. 1 mat raises up and down. We have a body weight support tread-mill, we have parallel bars, we have a set of 4 steps with handrails, we have a set of this other equipment like weights, some steps, some thresholds, some ramps. We kind of just pull them out when we need them. We have a table, but we don't use it really. There are little restorative bikes. Thats about it.

NS: What is the goal behind leisure activities?

P6: A lot of times when they are asked what they would want to do in their leisure time, I mean to the patient, what they would want to do. Mostly, our loal is to get them up and get them moving.

NS: How do you think that goal is accomplished?

P6: We are not as advanced. We don't have spaces for any kinds of sports or anything like that.

NS: If a patient is here in the leisure room with their family, a staff member would also be there always?

P6: Not necessarily. It really just depends on the patient, if they are more independent and safe with their family and they don't have a lot of issues, then I think it's fine. If the patient has cognitive deficits, like a brain injury along with the spinal cord, then we will need to send a staff member with them. It just kind of varies.

NS: How accessible is this room free or limited?

P6: It really is for the use of our patients and their families, but I know there are some visitors do come in here. It actually at night I think they lock this room up when we leave at night. So, it may not be accessible then.

NS: Do you allow volunteers to help you?

P6: They can't help, they can only observe. We only let trained people help us, unless it's a family member and they are going home with the family.

NS: Would you like to share an experience when you felt the physical environment effected the nature of social interaction of the patients with their family and friends?

P6: If they are wheelchair bound, they have a lot of depression, so they don't want to interact socially, they just want to be left alone. Sometimes it is the opposite with some patients. I know one time we had a patient and we took him on an outing and we went to a restaurant and he was up to that. Some patients are not up to it. They are depressed and they don't want to do it.

NS: Alright, thank you.

Interview #7

NS: What are the various opportunities for social interaction are available to these patients in an inpatient rehab setting?

P7: The main part takes place in the gym where they workout with other patients and see what other people are doing besides themselves. Thats with other patients. Now, The family time really takes place more in their rooms than anywhere else. They are also allowed to go down to the cafeteria if they need a bigger area or they can come down here

(leisure room) and kind of be away from others so that they don't disturb other patients. That's basically the main areas I can think of here.

NS: Other that that, any other common areas that you can think of?

P7: Other than that there are a couple of lobbies that people have found but other than that no.

NS: Do family members accompany them to the gym?

P7: They can, we have a limit that one family member or friend can come at a time. That's the usual but there have been times when there has been more than one. It gets a little bit overwhelming in there watching one patient when everyone is doing their stuff. When there are too many people, patients feel privacy issues. For spinal cord patients, it can be embarrassing, when they are first learning how to move and do things, it can be embarrassing. They are not on their feet, they are not walking. Also, we don't have a lot of room for people to attend and find places to sit and stay out of our way.

NS: How frequently do the patients go for therapy?

P7: Probably twice a day, morning and pm sessions for about 45 minutes at a time.

NS: Do they have specific slots or they all go together?

P7: No, we have set schedule that gets posted in their room.

NS: How many patients are usually there at a time?

P7: I would say 4 to 6 is about the average.

NS: Okay, so what is the physical characteristic of the gym space?

P7: There are 4 mats 7x7 maybe or 8x8, there is some parallel bars about 10 feet long, in the middle of the room it's got these poles but other than that it's kind of empty, then there is stairs to practice on and then cabinetry along the sides of the walls.

NS: What is the purpose of cabinetry?

P7: Storage for like some of the equipment that we can pull out from time to time, and there is a sink.

NS: When the family or friends come with the patient to the therapy rooms, do they sit on a side or...

P7: No they are right next to them.

NS: What is the goal of that space?

P7: To get the patients from A to B. Whether thats mat to chair or a 100 feet via walker or wheelchair. Just moving, get yourself from one place to the other. In the simplest terms.

NS: Is the gym free entry or semi restricted or restricted?

P7: I would say semi restricted because the patient's family is allowed but no one else.

NS: Can you think of any other kinds of spaces in inpatient rehab that are meant to give patients and their family and friends space to spend time with each other?

P7: Let me tell you about this other rehab I was at, they had an outdoor space that had a little area for like basketball, but they could setup volleyball. So, basketball and volley-ball are 2 sports that spinal cord injury patients play and they have leagues and stuff for them. Tennis too but we didn't have a tennis court. It had ramps, one that was steep, one that is not and curbs, so that they could practice like community skills, but it also was

like kind of big enough, so say that the track was around 200 feet around. So, they could race each other too, if they wanted. Sometimes it's a fun thing and makes them feel better about being in a chair and stuff like that.

This was a rehab hospital, so they didn't have acute patients like we do here. It was designed in a way that even stroke patients could come out there and play. It was in Florida, so we had a beach, like lots of sand, so people could walk on the beach. That stuff was useful because we don't have an area here to practice community type stuff, so it's good to have good environments that you might see later on, like sand and rocks and pebbles and curb. I wish we had a kind of outdoor area here because a lot of people just don't stay home and we don't have an outdoor space to practice in grass for any amount of time or anything like that.

NS: What is the name of this facility and where is it located?

P7: In Jacksonville, it's called Brooks Rehab Hospital.

NS: Have you ever felt that the physical characteristics of the space effected the nature of social interaction between the patients and their family and friends?

P7: When I was on the spinal cord unit there, it was hard to find your patients in their rooms because they were always playing Wii (video game) in the lobby together or would be outside, because spinal cords are usually younger guys who play video games or play sports, so yeah, we couldn't find them. It was hard to get hold of them because they had those 2 areas they could go to.

NS: What all was there in the lobby that they played Wii in?

P7: A TV that this Wii was connected to, a couch and like a couple of computers.

NS: Did it have windows?

P7: Oh yeah, the whole back like the whole wall was windows.

NS: What could you see outside the window?

P7: University Boulevard, like a road. Nothing else.

NS: What would they be doing outside?

P7: Playing, or talking to their family or other patients, just wheeling around with them.

NS: Thank you very much for your time.

P7: Sure, I hope it helps.

Interview #8

NS: What are the various kinds of social interaction opportunities that are available to this patient group in a rehabilitation setting?

P8: Are you talking about WIllis Knighton rehab?

NS: We can talk about both. About what we have in Willis Knighton and about what we don't have in Willis Knighton and it exists in other places.

P8: In certain facilities, you are limited by the building, because there is not a dining room for patients, you know they eat in their rooms, the food is delivered to the rooms, so, it's really isolated. Since they eat in their room by themselves, so, the real opportunities for socialization are in therapy or unless it's in the leisure room, where there is a television, a computer, a table, and I initiated getting a newspaper everyday for cognitive stimulation. A newspaper on a table, preferably a round table promotes socialization and interaction, just a round table. Then having something that is familiar to everybody, such

as a newspaper. Then, to have a TV on, even if it is just the weather channel, that just makes it inviting and make sure that the blinds are open and it's warm and inviting. We have a library in there, magazines, you know just things for conversations and cognitive stimulation. So, if it does not happen there, so the only other opportunity for socialization is really the gym. So, they are really limited.

Most facilities that I have worked at, they don't have a dining room. They typically have those at skilled nursing facilities, you know nursing homes, just because there are so many people. But rehabs are smaller typically, what 24 beds or 25 beds. I have worked at another one before I started at Willis Knighton, there was no common area there either. They didn't have a leisure room over there. So, the bottom-line is that in a rehab facility, you are limited. There is no dining area, you know thats where you typically gather and socialize. So, it just happens in the rehab gym typically. So, there are opportunities to promote it you with better building layout.

NS: How often do you think patients like to go in there?

P8: I take people in there almost everyday. I use it in therapy. A lot of times I take 2 or 3 patients at a time to get the patients to do their normal things, to get their mind of the pain. We use the newspaper for orientation, look up recipes, we just play games sometimes, dominos for fun. I take them there. Some high level patients might take themselves there, but usually they are by themselves. People don't gather there, unless you have 1 or 2 high level patients. They are sicker people that don't feel good, people that have some kind of cognitive deficit, you know, those kind of people are not going to gather on their own. It has to be usually high level cognitive patients.

NS: When the family or friends come in to visit, do they all like to hang out anywhere outside the patient room?

P8: Do they go to the leisure room?

NS: Anywhere.

P8: Anywhere? Well, now that you mention it, on the rehab wing, where the elevators are, there are I think 3 seats against one wall and 3 seats against the other wall. That's about the only place unless you go way to the leisure room. There is no other place. the building does not promote....it's an old building, so back then they didn't think about things the way we are thinking about them now.

NS: Are there any other any other facilities where you might have visited or worked with, where they have other kinds of spaces?

P8: Hmmm...let me think. I have been doing this....I have worked at a lot of places. I have been doing this for 20 years. I have worked at places ranging from little bitty hospitals to nursing homes to big hospitals. One hospital I worked at up on the psychiatric floors, where there were real common areas where real socialization was promoted. There were big spaces with chairs, you know that promoted big visiting. So, you know if you don't have the big building, if you don't have the physical setup to promote it, it's not going to happen. If there is just a long hall with no chairs, there is no place to visit, unless you know you have two people in wheelchairs. There still needs to be a little area to get out of the hallway. So, that's why they gather maybe at the elevator. So, gathering place, real leisure space should be open. You should see it properly, it should have a wide opening. It shouldn't be closed off. It should be easily seen, carpeted, the lighting

should be pleasant, there needs to be a round table which promotes gathering and socialization. Having a television on in the background, a big screen TV, even if it's just 'The Price is Right', or the weather channel, it's inviting, it's homey, it's a warm space. So, those things are very important. So, it's just begs for people to come in and hang out. It's like if you have a pretty comfortable kitchen at home, that's where people would want to hang out. If there are no comfortable chairs there, nobody is going to hang out in your kitchen and enjoy your food or enjoy watching you prepare the food. Does that make any sense?

NS: It sure does. So, when you get the patients in here for therapy, do family members some with them?

P8: Into therapy?

NS: Yeah.

P8: Yeah.

NS: Are they allowed to participate?

P8: Yeah, we encourage them to because usually the patients are going home, so the family members have to know how to handle them physically and meet their needs. So, we spend a lot of time training the family. We get the patient stronger and better, but if we don't teach the family how to, then it doesn't get carried over.

NS: Is there a limit to how many can come in at a time?

P8: We usually limit to one family member, only because once again, we have a small treatment area. Was it larger, more spaced out with different areas, it would be totally different. So, once again, space is very important. The smaller the space is, the fire code

dictates how many people can be in that space. That's why they figured it out for us. So, larger space would mean more room for family and friends.

NS: How many times do patients come into therapy everyday?

P8: On the rehab floor, we treat them a total of 3 hours a day. So, that's physical therapy, occupational therapy and sometimes speech therapy. Occupational therapy, we treat them twice a day, physical therapy treats them twice a day, and if speech is needed, they would treat them too. So, 45 minutes in the morning for OT, 45 minutes in the afternoon, 45 minutes for PT in the morning, 45 minutes in the afternoon.

NS: Is there only one gym that all patients go to?

P8: One physical therapy gym and one occupational therapy gym.

NS: How many patients go in at one time?

P8: Well, depends how many patients there are on the floor at a time.

NS: What percentage you would say?

P8: The most we can have per therapist is two. So, if we have 4 occupational therapist in the gym, each therapist has two patients, so a total of 8 patients at a time.

NS: At most?

P8: Right.

NS: Do the activities remain the same during the course of their stay or it changes anytime?

P8: It changes daily, or it should anyways. First of all, you know it is important to know that the patient wants to work on that day. If they are having trouble feeding themselves, and they are frustrated about it, we can work on feeding, or a task that will improve their

fine motor coordination, or if you know they want to do their laundry. We can you know work on that. If they also need to go to the bathroom, in occupational therapy we do toilet training. If they are cheerful and we just need to switch gears and go outside, get some fresh air, or go into the leisure room to play some dominos. So, it can change and it should change everyday. So, the patients get to decide what they want to do that day. Some people don't care, so then we decide as therapists.

NS: What are the physical characteristics of the leisure room?

P8: Well, i don't know how large the room is exactly, maybe 8x12 or 13. There are shelves on one end for books, there is a TV up high, windows with black shades on them, mini blinds and a big long square meeting table, which is not optimal. A sink, carpet, chairs on wheels that are comfortable and a computer in the corner, which is not optimal.

NS: Why do you think so?

P8: Well, the table is not round, or at least square to promote gathering. A long rectangular table does not promote gathering or socialization. Do you agree with me?

NS: Yeah.

P8: A big banquet table, no. You want intimate gatherings, so it needs to be atleast square or round. The lighting is horrible. It's overhead fluorescent lighting. So bright that it hurts to look at the television, which is mounted right underneath it. The dark mini blinds on the windows don't let light in. The colors in the room are not optimal (grays and browns). We are lucky to have it, an extra space in the facility. I make the most of it, but if I could, those are the issues that I would like to address.

NS: Are there any other facilities where you have seen spaces where patients spend time with their families?

P8: Dining rooms, well I know I have been to assisted living settings. They are well thought out, well designed, lots of little nooks, seating areas to gather. I am thinking of a couple of assisted living settings, they are beautifully well thought of. They give a place to rest along the way, because these are old people with a walker. So, comfortable little intimate settings, scattered throughout (gets excited and smiles), with a TV, with furniture, pretty lighting.

NS: How accessible these common spaces are as far as visitors are concerned?

P8: I try to keep it unlocked all the time. It does get locked int he evening though, but a real leisure room should not get locked round the clock. You should be able to gather with your family after dinner, so I try to keep it unlocked, so they can have access to it always.

NS: Is a staff member also present when they are in there with their family?

P8: No, they don't have to be.

NS: Can you think of a situation when you saw the physical setting impacting the nature of interaction between these patients and their family and friends? In a good way or a bad way?

P8: Well, often you know when I take 2 patients into the leisure room so that they can socialize, I see often that they talk to each other. I take people for them to facilitate conversation. Sometimes it's just a pleasant distraction. I have had positive outcomes with that space a lot.

NS: Thank you.

Interview #9

NS: What are the different types of socialization opportunities that are available to spinal cord injury patients in a rehab setting?

P9: Usually, when they are down in the gym, they go there in a group. Everybody is doing their own thing but they are down there together. Usually, it's in the rooms. Family and friends, they all come in the room.

NS: Are family and friends allowed in the gym?

P9: A few at a time because the place is not big enough for a group of people.

NS: Is there any other reason for this restriction?

P9: No. Just the space.

NS: Can family and friends stay with the patients overnight?

P9: Yes, the couch stretches out as a bed.

NS: Is there any other space?

P9: Well, sometimes they will go down to waiting room on the other part of the third floor, or they will go down to the small leisure room down there.

NS: Where is the waiting room located?

P9: It's by the elevators, it's not very private, it's has couches, TV, but it's not conducive sometimes, i don't think for visiting.

NS: How often do they go to the leisure room?

P9: Some people do, some people don't. It depends.

NS: Are there any particular activities that they indulge in while in the leisure room?

P9: I know there is a computer down there. I know there are books and a computer and a small table. I think here we don't have a good place for them to go.

NS: Okay. What do you think would be a good place for them to go to?

P9: I think there needs to be a nice dining/rec (recreational) room with chairs, tables. You know how you have seen some sitting rooms where you have some little tables clustered like sitting areas. Something like that will get together.

NS: What all do you think should be in those rooms?

P9: Well if you are doing spinal cords, they will be in their wheelchairs. So, you need space for them to be able to park their chairs next to others. Families could sit on the couch and they could pull up to a table and sit.

NS: What else can you think of?

P9: A TV will be nice, if they could watch a ballgame. I think some places where they could play some board games. Just games and books, i don't know. A coffee table, if they have puzzles to work on.

NS: Where do the patients eat?

P9: They eat in their rooms here/

NS: Do families eat with them?

P9: Sometimes yeah. They usually eat on their bed and the family gets on the couch and eats there.

NS: How frequently do patients go out of their rooms except for when they are going for therapy?

P9: Some of them go daily, get away from the four walls. Some don't want to go anywhere at all. So, it depends. Especially if the weather is nice, we let the family sign them out and take them outside.

NS: Okay, are there any specific activities that are scheduled in the leisure room?

P9: No, not that I know of.

NS: How do the patients and their families use the leisure room?

P9: I work nights, sometimes when I see them down there, they are playing on the computer for sometime before they go to bed. I don't know what they do during the day.

NS: Is it accessible to visitors?

P9: Yeah, they could.

NS: Is there a time restriction to how long they can stay there?

P9: No. Its just that the room is small, so you can't have too many people down there at one time. Other than that, no.

NS: Is there anything that comes to your mind that made you think that the physical environment impacted the nature of interaction of the patients with their families?

P9: Hmm....I don't think so. No.

NS: Okay, Thank you.

Interview #10

NS: What are the various social interaction opportunities available to spinal cord injury patients in here?

P10: Well, we don/t have too many truthfully. We have a small room that they can eat it. It's super small. It's a conference room and they use it as the recreational room and for conference. They can have family come in. I don't know how much outside stuff there is. We get our previous spinal cord patients come in and tell the current ones their experiences.

NS: where do they do that?

P10: The leisure room or they will just come into their rooms to let them know what went on with them. I don't know what else happens outside. Melissa, our social worker, puts them in touch with some groups.

NS: Anything else that you can think of?

P10: They have group therapies. They are all in the gym at same time.

NS: How long do past patients stay here with the current patients.

P10: Usually 30 min. It depends on how receptive our patients are.

NS: Do the patients go to the therapy in groups?

P10: Usually. Usually you know there is different therapist in the gym with 2 or 3 patients each at a time. They will have each doing different things. They let them do exercises that they can do on their own while they do one on one with the other ones. You know, just take turns. But the patients love it down there because they say they get to know each other. They talk to each other a lot.

NS: Okay, do family members go down there too?

P10: When we are down like this, we can let one family member go, but when we have 25 patients, there is not way can fit family and friends. We limit to one.

NS: What is the reason for this limitation?

P10: Space. Gym is very small. Occupational therapy room is very small. Did they show you one of them.

NS: No.

P10: We used to a long time ago have recreational therapy. We don't anymore. Only recreation they get is if their family comes. Sometimes on the weekends the techs will do a group activity with them.

NS: What is this group activity?

P10: They will do Bingo and that with the patients. But now we don't have enough room for anything big for all the patients except might be the gym.

NS: Are patients allowed in the leisure only with supervision?

P10: No we unlock the leisure room even on the weekends, so they can be there with their families. They can have a birthday, for the whole family.

NS: Do activities in the gym change with time?

P10: They change daily. Someone might start with a parallel bar, then they gradually increase. Now they finally got a treadmill down there with a harness. You know, we can hold them up and get their legs working.

NS: What was the goal behind the activities that you mentioned you used to have once a week like Bingo?

P10: Just for interaction, socialization.

NS: How do you think it is accomplishes?

P10: Just getting them all together in a fun environment. getting them out together instead of being in the room all the time.

NS: What are the physical characteristics of this space?

P10: It's and open area down there. I will show it to you if you would want to. It's an open area with 4 platforms they can lay on and do their exercises and stuff. We used to have a whirlpool room but now we don't because of health reasons. We have an exercise bike, now they have a treadmill.

NS: How accessible is the leisure room to outsiders?

P10: It is accessible if we keep it unlocked. Normally we keep it locked because we have got all kinds of books for the patients to read down there, there is a TV, there are all kinds of games like cards and if they want to play, we can unlock the room.

NS: Do volunteers ever come in?

P10: No

NS: Have you ever experienced that the physical environment impacted the nature of interaction between patients and their family and friends?

P10: I think, the way our facility is set up. Not having people to be able to...truthfully I think during the weekends, there should be group activities. get them out of the room, get them comfy. We have had some patients who have their birthday up here. We let them use the occupational therapy kitchen and cook their own food with their families. That is great. It makes you feel good that they are getting together with their family.

NS: Thank you.