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Identifying a New Area of Damages:
Assessing Time Loss Associated with Bowel Management

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Abstract

Individuals who sustain a spinal cord injury (SCI) are often faced with numerous challenges with physical functioning. These challenges or limitations often inhibit individuals with an SCI from completing everyday tasks such as activities of daily living (ADL). One ADL in particular that poses a significant challenge for many individuals with SCI is bowel management. Although many individuals with SCI are able to manage their bowel programs independently, the time associated with bowel management can often be more extensive than for an individual without a SCI. Several research studies have explored techniques, frequency and duration of bowel management programs; however, a limited amount of literature was found that addresses the actual time associated with completing an entire bowel program for an individual with SCI. The purpose of this exploratory study was to identify key variables for consideration when trying to predict the amount of time required for individuals with SCI to complete a bowel program. Data on 41 people with SCI were collected and analyzed from an experienced life care planner's database. Of the 41 individuals with SCI, 78% were male and the age range was 8-75 years with a mean of 38 and standard deviation of 18.08. Individuals

with paraplegia and tetraplegia were both recruited in order to ensure that variability in the ability to perform bowel care independently associated with level of spinal cord injury was captured in the study. According to the results of this study, the average time participants required to complete a bowel care program was 92.12±38.76 minutes. This study provided empirical evidence of the extended amount of time associated with performing a bowel regimen. Loss of such valuable time may result in decreased ability to be involved in other crucial life activities such as vocational, educational, and/or leisure activities. Time loss associated with ADL independence could be accounted for by life care planners experienced in understanding impact of disability. This study could serve as a starting point for researching this new area of damages, providing the empirical support for life care planners to incorporate this significant area of loss within their life care plans.

Introduction

According to the National Spinal Cord Injury Statistical Center (2006), there are approximately 253,000 people with spinal cord injuries (SCI) living in the United States. Depending on the level of injury, individuals with SCI often lack independence with activities of daily living (ADL) such as mobility, communication, eating, drinking, grooming, bowel/bladder function, sleeping, and sexuality. Understanding an individual's limitations with ADLs is critical when considering the impact of a disability or injury. One ADL that appears to have received little attention in the professional literature is bowel management. Although bowel care is often difficult for individuals to discuss due to its sensitive nature, it has a major life impact for individuals with SCI. In fact, Glickman and Kamm (1996) found that individuals with SCI reported that bowel management had a significant effect on life activities when compared with other ADLs such as mobility loss, sensory loss, sexual satisfaction issues, challenges with community accessibility outside the home, dependence issues, and work problems.

The ability of an individual with SCI to be independent with ADLs is typically associated with the level of lesion or level of injury (McKinley, Silver, Santos, & Pai, 2006). For example, an individual with tetraplegia with a lesion between C1 to C4 level is likely to require long-term mechanical ventilation and be dependent in performing a majority of ADLs. However, independence with bowel programs is more likely to occur with individuals who have lesions at the thoracic, lumbar, and sacral level. The degree of independence also is often based on a number of individual characteristics such as age, gender, and whether or not he or she requires assistance.

Independence with bowel management is often not addressed until an individual with SCI transitions from an acute care setting to a rehabilitation program. According to the Ohio State Medical Center (2007), an individual who sustains a SCI is first treated as an "in-patient" and then following discharge, referred to a spinal cord injury rehabilitation program. Some examples of these programs are acute rehabilitation programs, long-term rehabilitation programs, day-treatment programs, and transitional living programs. Once an individual is placed in an acute rehabilitative program, a rehabilitation team consisting of physiatrists, social workers/case managers, physical and occupational therapists, and other rehabilitation specialists collaborate on developing a rehabilitation plan. Goals are outlined within the rehabilitation plan to assist patients in returning to their highest level of functioning and quality of life as well as reintegrating into the community (Ohio State University Medical Center, 2007). Bowel management is a key component in achieving the goals outlined in the plan. A bowel management program includes constant monitoring and evaluation for

effectiveness. If limitations with any aspect of this process exist, it may be difficult for an individual with a SCI to independently complete a bowel program. Typically, bowel management for individuals who do not have disabilities involves several discrete steps, including undressing, transferring, evacuation methods, and clean-up. For individuals with SCI; however, additional steps may be necessary. For example, a person with SCI may be faced with numerous challenges such as medication and/or supplement intake, locating an accessible restroom, ability to dress/undress, transferring to the commode, completing the process of evacuation, physiological functioning associated with bowel management, and hygiene, such as washing hands. Clearly, assessing the length of time for completion of a bowel program involves much more than only capturing evacuation time alone. As such, life care planners who are estimating economic damages in a case should consider the time associated with completing an entire bowel management program independently. The rationale for this consideration is based on the fact that although an individual with a SCI may not require assistance, there is a time loss associated with independent bowel management. The loss of time could directly impact an individual's ability to perform other life activities such as working and leisure activities. In fact, two cases recently litigated in two different states established that loss of time with ADL independence should be considered an economic damage. These court cases will be discussed further later on in the article.

Life Care Planning Considerations

Following discharge from rehabilitation programs, individuals with SCI are often faced with a lifetime of challenges associated with balancing disability-related needs with other aspects of their lives including family, work, and social life. Life care planners (LCPs) are professionals who are trained and experienced in understanding the long-term impact of disability across an individual's life span. As such, it is critically important for life care planners to be able to assess an individual's ability to be independent with ADLs in order to make accurate long-term recommendations. For example, life care planners often identify assistive devices to increase independence for individuals with high level spinal cord injuries, such as recommending a motorized wheelchair with hand control for a person with a complete C5 injury (McKinley et al., 2006).

Life care planners are a diverse group of professionals representing a number of different disciplines, such as rehabilitation counseling, nursing, rehabilitation psychology, physiatry, and case management. These professionals utilize published standards of practice, comprehensive assessment, data analysis, and research in order to develop an organized, concise plan for current and future needs with associated costs for individuals who have experienced catastrophic injury or have chronic health care needs (Weed, 2004). Generally, life care plans serve as a foundation for determining the client's needs as well as economic impact of a catastrophic disability, and, especially in the case of personal injury and other types of litigation, must be defensible in courts of law (Pomeranz, Shaw, Sawyer, & Velozo, 2006). Therefore, thorough review of all affected aspects of daily living, including bowel management is critical.

Independence with Self-Care

Despite the fact that life care planners consistently evaluate an individual's need for assistance with ADLs, there has been little focus on the amount of time required to perform ADLs by individuals who perform self-care activities independently. The lack of attention to this issue may lead to an inaccurate understanding of key disability-related issues of a person's

daily life. While it may appear to the life care planner that there are no losses to be accounted for, due to the individual's independent status, the additional time required to perform these activities means that individuals are losing time during the day that otherwise could be used for social, leisure, and vocational activities. Individuals without disabilities generally have complete autonomy with regard to use of their personal time. Individuals with SCI, however, often spend much of their time performing ADLs, such as bowel management, due to the fact that their functional limitations make the process lengthier. The consequences of this "lost time" for individuals with SCIs may include lost wages, lack of fringe benefits, and decreased employment productivity (Priebe, Chiodo, Scelza, Kirshblum, Wuermser, & Ho, 2007). According to the National Spinal Cord Injury Statistical Center (2008), this loss of productivity could contribute to an annual wage loss of $62,270 per year in September 2007 dollars for individuals with SCI. The authors note that this amount is based on all ADLs, not just bowel management, and considers variables such as education, severity of injury, and pre-injury employment history.

The economic loss associated with independence in self-care has been supported by two cases that have been litigated within the United States Court System. The first case, Michelle Shirley v. U. Duane Smith, M.D. (1997), involved a patient in Kansas who underwent bone marrow aspiration that resulted in a spinal cord injury. The patient was awarded $135,000 for future economic loss associated with independent self-catheterization. The plaintiff argued that she lost an hour a day for life, due to the time required to complete her self-catheterizations for bladder management. After numerous appeals, the ruling was upheld by the Supreme Court that the patient could recover economic damages for time lost during daily self-catheterization. In this case, economic loss was defined as the type of damage that includes loss of time or income to date by reason of plaintiff's disabilities and that which plaintiff is reasonably expected to lose in the future. The issue of economic damages associated with independent self-care also surfaced in the state of Colorado. In the case of Alma S. Navarro v. Edward Elsey, Jr., M.D. (2007), a motion was made by the defense to thwart a plaintiff's economic damages claim with respect to self-administered treatment. The plaintiff argued that her self-care should be considered economic damages, not non-economic damages, stating that if the value of self-administered treatment, as measured by the value of the time required to administer such treatment, constitutes "medical and other costs of healthcare" or "other economic loss except loss of earnings," then the loss does not apply to punitive or non-economic damages. The court denied the defendant's motion to bar plaintiff's economic damages claim relating to self-administered treatment. Additionally, the court illuminated the issue of properly measuring damages for self-treatment. One method for such a measure is to examine the cost for a provider to assist with self-care (as with the case of Shirley v. Smith) or alternatively, assessing lost earnings or wages associated with time loss for independent self-care. Both methods exemplify the issue of economic loss associated with independence with self-care activities.

Bowel Management

Bowel management is an example of a self-administered activity that can have significant economic consequences for individuals with disabilities. A review of the literature has produced limited information regarding the amount of time associated with independent bowel care. A study by Glickman and Kamm (1998) found that most of the patients in their sample completed their bowel programs in less than 45 minutes. A limitation of this study is that time was not measured separately for people with paraplegia and people with tetraplegia. Another

limitation is that the authors did not specifically describe the bowel program process; therefore, it is difficult to determine whether or not the entire process was timed or whether the authors simply examined time of evacuation. Another study by Lynch, Wong, Anthony, Dobbs, and Frizelle (2000), demonstrated that people with complete SCIs spend 15-30 minutes completing their bowel programs, whereas people with incomplete injuries spend less than 15 minutes. This study was limited, however, because the measured time only included evacuation time. Evacuation time appears to be the time associated with only the emptying of the individual's bowel and does not encompass the time of the entire process from start to finish. The authors did not consider the time associated with prepping for, performing, and cleaning following a bowel movement. A more recent study by Yim, Yoon, Lee, Rah, and Moon (2001) found that their sample of upper motor neuron bowel patients required 184.70±119.21 minutes per week, or an average of about 57.36 minutes per defecation. Individuals with lower motor neuron bowel took 395.54±425.38 minutes per week, or an average of 28.98 minutes per defecation. However, this study defined their sample differently by comparing individuals with upper motor neuron bowel and individuals with upper motor neuron bowel. The researchers also found that the amount of fiber intake improved bowel function in their sample. However, this study had some limitations. One limitation was that the investigators had to rely on memories of patients and their caregivers. Another limitation was that the researchers could not measure the amount of fiber intake of their participants. A final limitation was that the authors failed to describe the components involved in the bowel management process.

A typical bowel management program for individuals with SCI involves multiple steps, and varies by individual. The program usually begins with a suppository or an enema. Following the insertion of a suppository or completion of an enema, the individual typically needs to wait approximately 15-20 minutes. The next step is for the individual to sit on the commode and begin using digital stimulation every 10-15 minutes until the rectum is empty, however, no more than four digital stimulations should be completed in one session to prevent damage to the rectal tissue. For individuals who do not require a suppository or an enema, their program will begin with digital stimulation or manual evacuation of their stool (SCI-Info-Pages, 2006). Without considering the additional time associated with the entire bowel management process, it would appear that individuals with SCI spend a negligent amount of additional time on bowel management when compared with able-bodied individuals. This misconception can lead to a deficiency in the long-term planning of services and care for individuals with spinal cord injury.

Method

The purpose of this study was to examine the amount of time associated with bowel management for individuals with SCI.

Subjects

Data from a convenience sample of 41 individuals with SCI were obtained from a database compiled from an experienced life care planner's caseload. Data for this study came from individuals with SCI who had been referred for a life care plan and were interviewed between 1997 and 2007. The data was originally collected in an interview format with either the individuals themselves or a proxy such as a parent, guardian, or personal care attendant. The life care planner acquired information regarding the person's bowel care program as well as other relevant aspects of their injury. The selection criteria used for data compilation for this

study were that the individuals must have sustained an SCI and have received a life care plan. Since this is an exploratory study of time associated with bowel management for individuals with SCI, the investigators chose to obtain data for individuals with any level of SCI. Data for individuals with multiple diagnoses and/or cognitive impairments were excluded from the study.

Data Analysis

Descriptive statistics were computed using the Statistical Package for the Social Sciences (SPSS), version 15.0. Data were calculated for sex, age, level of lesion, American Spinal Injury Association (ASIA) ratings, whether or not the individuals required assistance to complete their bowel program, and various types of bowel care programs. The types of bowel care programs identified by participants included use of suppositories, amount of fiber intake, use of digital stimulation, laxatives, stool softeners, and enemas. Means and standard deviations were supplied for all continuous data such as age and total time involved in bowel care (in minutes). Frequencies were reported for the various types of bowel care programs.

Independent samples t-tests were performed to test the difference between two sample means for significance in relation to the total time involved in completing bowel care. For this study, a two-tailed p value of less than .05 ($p < .05$) was regarded as statistically significant, however, because the researchers completed two separate independent t-tests, the p-value was Bonferroni adjusted to reduce Type I error. Type I error is reduced by dividing the p-value of .05 by the number of tests conducted. In this case, the p-value of .05 was divided by two, and the new statistically significant value was .025. The independent variables examined included: sex and whether or not the individual required assistance to complete his/her bowel care.

Results

Descriptive Analysis

Table 1 includes a breakdown of the descriptive statistics resulting from this study. Of the 41 individuals with SCI, 32 (78%) were male. The age range of these participants was 8-75 years with M = 38 (S.D. = 18.08). Twenty-nine (71%) of the individuals with SCI in our sample required assistance, while 12 (29%) required no assistance. The results of the frequencies for each bowel program were 20 (48.8%) used suppositories; 31 (75.6%) used digital stimulation; 3 (7.3%) used fiber; 9 (22%) used laxatives; 8 (19.5%) used stool softeners; and 2 (4.9%) used enemas to assist with bowel evacuation. The mean time required to complete all steps of the bowel management program was 92.12 minutes (S.D. = 68.76).

Independent Samples T-Test Analyses

Data for sex were obtained and compared to the dependent variable, total time. The investigators found that males and females took about the same amount of time to complete their bowel care programs, and no statistically significant result was found based on sex alone. The other variable that was examined was whether the need for assistance affected total time required for the bowel management program. For this sample, 12 (29.3%) individuals reported being independent with their bowel care. Interestingly, people who received assistance took significantly longer to complete their bowel regimen ($t(39) = -2.358$, $p = .024$).

Discussion

As is evident by the results, a majority of the sample reported that they spend a large amount of time with their bowel management program. One study by Harari, Sarkarati, Gurwitz, McGlinchey-Berroth, and Minaker (1997) found that 41% of their sample with

Table 1

Time Management Variables Associated with Bowel Care

Variables		N = 41	Frequency (%)	Mean (in min)	Standard Deviation	Significance
Sex	1 Male	32	78	92.50	75.48	.948
	2 Female	9	22	90.78	39.47	
Age		41		38	18.08	
Assistance Required	1 No	12	29.3	54.88	27.35	.024*
	2 Yes	29	70.7	107.55	74.95	
Bowel Care Programs	*Suppository*					
	1 Not Used	21	51.2			
	2 Used	20	48.8			
	Digital Stimulation	10	24.4			
	1 Not Used	31	75.6			
	2 Used					
	Fiber	38	92.7			
	1 Not Used	3	7.3			
	2 Used					
	Laxative	32	78			
	1 Not Used	9	22			
	2 Used					
	Stool Softener	33	80.5			
	1 Not Used	8	19.5			
	2 Used					
	Enema	39	95.1			
	1 Not Used	2	4.9			
	2 Used					
Total Time for Involvement		41		92.12	68.76	

* p<.025

chronic SCI spent more than one (1) hour per evacuation. Our findings, along with the findings of Harari, et al. (1997), suggest that individuals with SCI spend a significant amount of time performing their bowel management programs. In addition, there was a significant difference in time associated with bowel management between individuals with SCI who required assistance and individuals who were independent. People who required assistance appeared to take longer to complete their bowel program. One possible reason for the increase in time could be related to the severity of injury. Individuals who have a higher level SCI and require assistance most likely face more challenges in managing their bowel programs. Although there was a significant difference between individuals who were independent and dependent, individuals who were independent still spent over 50 minutes to complete their bowel programs. The investigators also found that individuals with SCI in this sample utilized suppositories and digital stimulation most frequently to complete their bowel care programs.

Limitations

A significant limitation of this study is the small sample size. The study also had a high proportion of males. This was an exploratory study to determine key areas for further research

regarding time associated with bowel management. Additionally, the data was collected from a convenience sample of individuals referred for life care plan development from one expert life care planner's database spanning a 10 year time period. It is possible that there might have been more variability if the data came from a larger number of life care planners who have various levels of knowledge and experience.

Conclusion and Implications

As this project and other studies have found, bowel management is a comprehensive and challenging activity for individuals with SCI. Furthermore, the time associated with bowel management is extensive regardless of the level of spinal cord injury. Although the court cases discussed within this article were related to independent self-care, this study revealed that individuals who require assistance with bowel management also take a prolonged amount of time to complete their bowel program. Even though such individuals are receiving assistance with their bowel care, they are still losing time for other life activities such as work, socializing, and participating in leisure activities. Based on previous court decisions and current methods for assessing economic damages, wage loss appears to be a logical replacement for lost time associated with bowel management.

This study should serve as a starting point for researching this new area of damages, and should serve as a basis for the life care planner to incorporate this significant loss within their life care plans. Further research is necessary to identify additional key variables to consider when assessing the time associated with bowel management. A logical next step would be to conduct a more global study involving a large sample of individuals with SCI to further examine the variables identified from this pilot study. In addition, this study can serve as a model to explore time associated with other ADLs such as bladder management, eating, and dressing. Along with exploring this new area of damages, additional research is warranted to develop and establish a consistent methodology for measuring the economic loss associated with ADL independence.

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Court Decisions

Alma S. Navarro v. Edward Elsey, Jr., M.D., No. 06CV9742, March 26, 2007.

Michelle Shirley v. U. Duane Smith, M.D., No. 72538, March 7, 1997.

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