



A comparison of women and men with spinal cord injury

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While research on spinal cord injury (SCI) is abundant, few studies focus on women. This population-based study investigates differences in the prevalence of secondary conditions between 128 women and 522 men. Case managers retrospectively interviewed 650 persons regarding medical and psychological conditions secondary to SCI, as well as other life issues. Overall, males and females show more similarities than differences in the ways in which they manage life with SCI. Differences were found, though, regarding etiology of initial injury, insurance coverage, caregiver use, transportation use, medication use, and in other medical and behavioral areas. Females are significantly involved in more automobile crashes than males, while males are involved in more falls than females. Females are more reliant on Medicaid, while males report more Medicare and Worker's Compensation coverage. Females are more likely to have a paid attendant as a caregiver while males are more likely to have their spouse or parents assist. Males report more independence in their use of transportation than females. Males and females also report significant differences in the use of medication. Females are more likely to use medication any time it is a treatment option. Males are more active, use tobacco more and have more arm fractures postinjury than females.

Keywords: spinal cord injury; secondary conditions; paraplegia; women; men

Introduction

Although women sustain approximately 20% of all spinal cord injuries,^{1,2} research which is applicable to women with SCI is not easily found. Those studies which do focus on such women are frequently directed toward reproduction or depression.³ For practitioners, obtaining information regarding secondary conditions of women with SCI may be a demanding task. In addition, such women may find it frustrating when trying to find information about themselves.

Just 50 years ago someone injuring their spinal cord was not expected to live very well or very long.⁴ Advances in medicine and rehabilitation have now provided persons with SCI a relatively normal life expectancy.⁵ However, the longer someone lives the more likely it becomes that person will experience medical conditions which are secondary to the injury.⁶ Pope⁷ states that a 'secondary condition is any additional physical or mental health condition that is causally related to a primary disabling condition.' While more people are surviving the initial SCI, many are facing medical circumstances which are secondary to the injury itself, such as pressure sores, urinary and gastrointestinal problems, depression, as well as chronic pain.⁸ Any secondary condition has the potential to affect a person's quality of life, independence, and perhaps may even become life-threatening if not treated.⁹

Items relating to lifestyle and medical issues are examined here. In the analysis of this unique data, women report some differences, as well as some similarities with men in the ways they manage life with a spinal cord injury. The areas discussed here highlight statistically significant differences between female and male respondents.

Method

The focus of this study is the investigation of 650 Arkansans with SCI, consisting of 128 women and 522 men. The male to female ratio of four-to-one corresponds with estimates in the literature.^{1,2}

The data analyzed for this paper were obtained from the 1996 *Identifying Secondary Conditions in Arkansans with Spinal Cord Injuries*¹⁰ research project conducted by the Arkansas Spinal Cord Commission (ASCC) in cooperation with the Centers for Disease Control and Prevention (CDC). The methodology of this project has been described in detail in the previously mentioned report, so that only a summary is presented here. The participants were identified by a state mandated registry of all persons with a SCI and were interviewed in their place of residence by ASCC Case Managers. Although the sections regarding medical conditions were by self-report, each question was predefined by the interviewer as 'has your doctor ever told you that you had ...'

All of the respondents in this study had a spinal cord injury and were at least 1 year postinjury. The mean number of years since injury was 14.5, with females reporting a mean of 15.9 years and males reporting a mean of 14.2 years since injury. Nearly one-half (45.4%) of all respondents had been injured 1 to 10 years, almost 30% (28.2%) had been injured 11 to 20 years, and just over a quarter (26.4%) had been injured 21 years or more. The respondents were over the age of 18 and drawn retrospectively from the ASCC registry.

Individuals injured less than 1 year were not included since most of the secondary conditions in the survey may not have been experienced by them. In addition, individuals whose cognitive skills were severely impaired (ie severe head injury or developmental disability) were not included since they could not adequately respond to the survey questions. Overall, 650 of the 991 eligible respondents were interviewed for a completion rate of 66%.

Demographic characteristics

Female respondents account for nearly 20% (19.7%), while male respondents account for just over 80% (80.3%) of the study population. Approximately 20% (19.5%) of female respondents and around 23% (23.4%) of male respondents are classified as non-white. A significantly greater percentage of female respondents (67.2%) than male respondents (55.9%) are classified as having paraplegia ($P < 0.05$).

An automobile crash is the most common cause of injury and over one-half of all respondents were injured due to some type of motor vehicle crash. Violence is the second leading cause, followed by injury from a fall. The difference in injury etiology between the sexes is statistically significant ($P < 0.001$). Female respondents are more likely to have been injured in an automobile crash, a medical mishap (such as surgery), and in sports not including diving. Male respondents report much higher percentages of being injured due to a motorcycle crash, a fall, being hit by an object, and diving. Female and male respondents report injury due to other vehicular crash (for example, ATV, bicycle, pedestrian with collision) and due to violence at similar rates. Only males report sustaining an injury due to diving or due to other cause (such as airplane crash, animal attack).

Females are more reliant upon Medicaid ($P < 0.01$) or private insurance/HMOs than males. A larger proportion of males report Medicare ($P < 0.01$) and Worker's Compensation ($P < 0.001$) as being responsible for their medical expenses. Many of those listing 'other insurance' state they rely upon Veteran's benefits which is why the proportion of males indicating this category is nearly four times greater than for females ($P < 0.001$). Males (93%) attended an acute rehabilitation program following their injury at a higher rate than females (85.6%) ($P < 0.05$).

For a more detailed description of the population's demographic characteristics please refer to the Arkansas Spinal Cord Commission's 1996 report to the Centers for Disease Control and Prevention, *Identifying Secondary Conditions in Arkansans with Spinal Cord Injuries*.¹⁰

Lifestyle issues

Assistance with activities of daily living can be both challenging and expensive. Females and males rely upon different caregivers to supply assistance ($P < 0.05$). Males are more likely to have a parent or spouse assist, while females are more likely to have a paid attendant or a relative other than a spouse or parent assist them.

The number of hours someone is out of the bed and the number of days a person leaves their house may signify that person's level of independence. On a typical day, female and male respondents both spend an average of 12.5 h out of bed per day. However, the two most frequent amounts of time out of bed differ greatly for female and male respondents ($P < 0.05$). The modal frequency for time out of bed is 12 h for females and 16 h for males. Women leave the home an average of 3 days per week, while men leave an average of 4 days ($P < 0.01$). The most frequently stated number of days varies greatly between the sexes. Females report most frequently leaving the house 2 days per week, while males most frequently report leaving 7 days per week. Women are more likely than men to spend their time performing homemaking activities ($P < 0.001$).

Transportation is an issue of concern. Female respondents are much less independent in their use of transportation than male respondents. A greater proportion of male than female respondents use their own personal vehicle ($P < 0.001$). Females are nearly twice as likely as males to use someone else's vehicle and are more likely to use taxi service ($P < 0.001$). A greater proportion of male respondents than female respondents state they are able to use their transportation independently ($P < 0.001$). Males are also more likely than females to be able to use their mode of transportation with little or no advance notice ($P < 0.05$).

Medical issues

Females and males report similar rates of cardiovascular conditions, such as high blood pressure, heart disease, stroke, heart attack and high cholesterol. The only cardiovascular condition which showed a significant difference between the sexes is low blood pressure. Female respondents report low blood pressure in a much greater proportion than male respondents ($P < 0.001$). Female respondents are also significantly more likely than male respondents to perceive themselves as overweight ($P < 0.01$).

While females are less likely than males to use tobacco products ($P < 0.001$), they are more likely to

have current respiratory problems ($P < 0.05$). However, females are less likely than males to report interference in their daily activities (work, leisure, activities of daily living, sleep) by respiratory problems ($P < 0.05$).

Female respondents are more reliant upon medication for their bowel program than male respondents ($P < 0.01$). While both male and female respondents are most likely to perform a bowel program every other day, there is a significant difference in the proportion of those who conduct their program daily and those who conduct their program every other day ($P < 0.05$). Males are more likely than females to have a daily program, while females are more likely than males to conduct their program every other day.

Approximately one-fifth of both female (19.0%) and male respondents (19.9%) void on their own. About one-third of females (32.5%) and males (27.8%) use intermittent catheterization for bladder management. However, female respondents are more likely than males to use padding ($P < 0.001$), urethral catheterization ($P < 0.001$), and a urinary ostomy device ($P < 0.01$), while males are more likely to use suprapubic catheterization ($P < 0.05$). While not applicable to females, the most common option for bladder management by males is the use of an external collection device. Females are more likely to take bladder medication and antibiotic medication, as well as being much more likely to experience urinary tract infections than males.

Most muscle and bone conditions occur at similar rates between males and females (contractures, heterotopic ossification, carpal tunnel syndrome, rotator cuff tear). The only condition which shows a significant difference is osteoporosis ($P < 0.01$). As in the general population,¹¹ women report a much higher percentage. Around 40% of male and female respondents report limitations in range of motion. However, only females report a significant interference with their activities of daily living ($P < 0.05$). While male and female respondents report similar proportions of leg fractures and other bone fractures, males report a greater proportion of arm fractures since injury ($P < 0.05$).

Other medical concerns which show a significant difference between males and females include: anemia, fatigue, and methods for relieving pain. Females are more likely than males to experience anemia ($P < 0.001$), which is also true in the general population,¹² fatigue ($P < 0.05$), and are more likely to take medication for pain ($P < 0.001$).

Conclusion

The two most notable differences between males and females in this study are that of transportation and use of medication. Overall, female respondents are much less independent in their use of transportation than are male respondents. Most prominent among the items on transportation is the fact that significantly more male than female respondents use their own personal vehicle

as opposed to someone else's vehicle. Males are also less likely to have to give notice to someone for use of transportation than females. The responses from the items on transportation illustrate that females may be less independent than their male counterparts.

Female respondents are much more likely than male respondents to use medication anytime it is a treatment option. When asked about the month prior to the interview, females were significantly more likely than males to have been taking medication for pain, bladder management, depression, as well as antibiotics. Female respondents also stated that since injury they have been significantly more likely than male respondents to take medication for regulation of their bowel program, and pain medication.

Perhaps alternatives to medication for women (such as pain management techniques) should be emphasized more directly during rehabilitation. Although not applicable to some medications, it would be interesting to see if the significant differences in medication usage are simply a reflection of the habits of preinjured females and males.

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