

Author Year; Country Score Research Design Total Sample Size	Methods	Outcome
Mazurek et al. 2011 USA Case-control Level 3 N=149	<p><b>Population:</b> 149 SCI patients (111M 38F); mean age at injury: 36.3 yrs; 113 rural &amp; 36 urban living</p> <p><b>Treatment:</b> No treatment.</p> <p>Purpose was to assess the differences in injury-related factors, rehabilitation services and costs, and rehabilitation outcomes in individuals with SCI in rural areas vs. those in urban areas.</p> <p><b>Outcome measures:</b> Demographic and injury-related variables, rehabilitation services received, length of stay (LOS) in acute and rehabilitation settings, and costs.</p>	<ol style="list-style-type: none"> <li>1. Urban and rural residents did not differ in terms of costs of acute care and LOS.</li> <li>2. Urban residents experienced significantly longer rehabilitation hospitalization stays.</li> <li>3. No differences between urban and rural residents in terms of the number of hours of physical therapy, occupational therapy or psychological services received.</li> </ol>
Gulati et al. 2010 UK Case-control Level 3 N=30	<p><b>Population:</b> 30 of 39 surviving traumatic SCI patients; mean age 73 yrs (range 65-88); 24 incomplete; 21 cervical, 3 thoracic, 6 lumbar level</p> <p><b>Treatment:</b> No treatment. The purpose of this study was to describe functional outcome and discharge destination of elderly patients with traumatic SCI.</p> <p><b>Outcome measures:</b> Data from the National Injuries Unit database (2000-2005) included the following variables: demographics, cause of injury, level of injury, type of cord injury, associated injuries, discharge outcome and hospital stay, American Spinal Injury Association impairment scale, Functional Independence Measure Score (FIM).</p>	<ol style="list-style-type: none"> <li>1. 11 patients (37%), all with incomplete injuries, were discharged home and had significantly higher FIM scores at the onset and discharge from rehabilitation compared to those discharged to a nursing home or other hospital.</li> <li>2. Those discharged home also had a significant improvement in their FIM score from the onset of rehabilitation to discharge.</li> </ol>
DeJong et al. 1984 USA Case Series Level 4 N=75	<p><b>Population:</b> 75 individuals (63M 12F); 71% &lt;35 years old; 51 had SCI ≥3 years,</p> <p><b>Treatment:</b> No treatment. The purpose was to determine factors that predict the ability of persons with SCI to live independently following discharge from rehabilitation.</p> <p><b>Outcome Measures:</b> Overall independent living (IL), socio-demographics, disability (Barthel Index and 4 other factors), environmental aspects (attendant care, housing, transportation, work disincentives, services received), and interface variables bridging functional limitations and environmental barriers (unmet equipment needs).</p>	<ol style="list-style-type: none"> <li>1. Significant predictors of living arrangement outcome were marital status, age at onset, sex (female was associated with greater independence), transportation barriers, medical supervision, and services received.</li> <li>2. Seven variables explained 63% of the variance in IL outcome; the greatest predictors are marital status; transportation barriers; education level; degree of medical supervision required; economic disincentives; services received; and severity of disability.</li> </ol>
Pettersson et al. 2015 Sweden Cross-sectional Level 5 N=48	<p><b>Population:</b> 48 power mobility device (PMD) users with median age of 64 years, 33 males, 15 females, 26 participants with paraplegia, 22 participants with tetraplegia. Participants have traumatic or non-traumatic SCI for at least 10 years. 31 participants used their PMD only outdoors, 17 used their PMD both indoors and outdoors.</p> <p><b>Treatment:</b> No treatment. The purpose was</p>	<ol style="list-style-type: none"> <li>1. The only variable significantly related to being either in the 'less restriction' or 'more restriction' groups was median number of years living with SCI (i.e., the more years living with SCI, the less restriction in autonomy indoors).</li> <li>2. The functional limitations of reduced fine motor skills and poor balance were present in nearly all who used a PMD both indoors</li> </ol>

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	<p>to describe environmental barriers, accessibility problems, and PMD users' autonomy indoors and outdoors.</p> <p><b>Outcome Measures:</b> Environmental barriers were assessed using the environmental component of the Housing Enabler assessment. To analyze accessibility, a matrix, that juxtaposed the profile of each participant's functional limitation with the environmental barriers found present in the dwelling, was used. Autonomy was assessed by Impact on Participation &amp; Autonomy (IPA) instrument.</p>	<p>and outdoors but were significantly lower among those who used a PMD outdoors only.</p> <p>3. The number of functional limitations was significantly associated with autonomy indoors and outdoors. This implies that the greater number of functional limitations, the greater the restriction in autonomy indoors and outdoors.</p> <p>4. The 3 environmental barriers that generated the most accessibility problems in exterior surroundings and at entrances were the same for PMD users both indoors and outdoors. The barriers included: mailbox/trash receptacle difficult to reach, irregular or uneven surfaces, high steps, doors that cannot be fasted in open position, doors that do not stay open or close quickly.</p> <p>5. Location of PMD use was not significantly associated with autonomy either indoors or outdoors.</p>
<p>Scovil et al. 2012 Nepal Cross-sectional/Qualitative Level 5 N=37</p>	<p><b>Population:</b> 24 people (14M 10F) mean age: 33 yrs (range 14-59); YPI: 2 days to 14 yrs; injury level: lumbar: 9; thoracic: 11; cervical: 4. Participants were visited 11-27 months post discharge. 84% had been injured through falling, 15 were wheelchair users, 4 required walking aids and 5 could walk unassisted.</p> <p><b>Treatment:</b> No treatment. The purpose was to evaluate the ongoing health and community reintegration of patients with SCI.</p> <p><b>Outcome Measures:</b> Semi-structured interviews, the Modified Barthel Index, and the Participation Scale were used to evaluate health, independence in daily living, community participation and barriers due to socioeconomic issues, housing, accessibility, and availability and use of mobility aids.</p>	<p>1. Inappropriate wheelchairs, inadequate housing and rugged terrain restricted accessibility.</p> <p>2. 80% of wheelchair users could not enter their homes independently.</p> <p>1. Half of those interviewed had no accessible toilet, access to a water source, or road access to their home.</p> <p>2. 19 owned their own home, 5 rented.</p>
<p>Kennedy et al. 2010 UK Cross-sectional Level 5 N=80</p>	<p><b>Population:</b> 80 people with SCI; ratio of 2:1 (men: women); mean age = 50.37 yrs (range 18–81 yrs); 3–18 months post discharge; 8 complete and 23 incomplete tetraplegia; 17 complete and 23 incomplete paraplegia; 9 unknown.</p> <p><b>Treatment:</b> No treatment. The purpose was to assess the needs and perceived environmental barriers of SCI patients living in the community 3–18 months after discharge.</p> <p><b>Outcome Measures:</b> A postal survey using a</p>	<p>1. The majority of participants (67.9%) felt there were issues after discharge that made transition difficult, mostly due to accommodation and adaptations (29%).</p> <p>2. 49% of respondents experienced a delay in acquiring the necessary adaptations.</p> <p>3. The lack of resources making transition most difficult were, in order, adaptations (35%), equipment (27%), and poor access (19%).</p>

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	number of standardized measures and open ended comments.	
<p>Anzai et al. 2006 Canada Observational Level 5 N=52</p>	<p><b>Population:</b> 52 participants (40M 12F); mean age 45.3; 33 participants had a C4 lesion; 31 were categorized as AIS – A. <b>Treatment:</b> No treatment. The purpose of the study was to identify and describe the factors associated with whether individuals with high lesion SCI were discharged from rehabilitation to an extended care unit (ECU) versus other settings, including private homes, group homes, and acute care. <b>Outcome measures:</b> Location to where participants were discharged; individual characteristics, health-related characteristics; personal context, hospitalization factors; and health resources.</p>	<ol style="list-style-type: none"> <li>1. 21 participants were discharged to an ECU (12 as a permanent destination, 9 as interim placement). Of the 9, 3 participants eventually returned to the community.</li> <li>2. 25 participants were discharged to a home; 2 to a group home; 1 to a shared care apartment; and 3 to acute care.</li> <li>3. Univariate analyses revealed 7 factors significantly associated with discharge to an ECU versus community: age, employment at time of injury, pre-existing medical conditions, social support, pre-injury living situation; and insurance or private funding for equipment.</li> <li>4. Multivariate analysis revealed 4 factors significantly related to location of discharge: insurance; private funding for equipment; age; pre injury living situation.</li> </ol>
<p>Cesar et al. 2002 USA Observational Level 5 N=69</p>	<p><b>Population:</b> 69 individuals (55M 14F); ≤5 years post injury; 31 paraplegia and 38 with tetraplegia; living in the community. <b>Treatment:</b> No treatment. Purpose was to assess the living situation of recently injured individuals, to identify any safety concerns, and to address potential solutions to eliminate the concerns. <b>Outcome Measures:</b> Safety in the home Environment.</p>	<ol style="list-style-type: none"> <li>1. Most perceived themselves relatively safe in their environment (safe from crime in home, safe going out in neighborhood, feel safer when go out with friends than alone).</li> <li>2. 45 felt prepared for a fire in their home; 24 expressed a need for assistance with fire safety concerns.</li> <li>3. No statistical difference in overall perceptions of safety between those with paraplegia and those with tetraplegia.</li> </ol>
<p>Boschen 1996 Canada Observational Level 5 N=82</p>	<p><b>Population:</b> 82 individuals (66M 16F) with traumatic SCI (age range = 18 – 35); ≥1 year post- injury; 46 participants with tetraplegia <b>Treatment:</b> No treatment. The purpose of this study was to evaluate the correlates of life satisfaction, residential satisfaction, and locus of control among individuals with SCI. <b>Outcome Measures:</b> self-administered questionnaire (Living with Spinal Cord Injury); residential choices; perceived activities choice scale, activities choice congruence scale; and Locus of Control Scale.</p>	<ol style="list-style-type: none"> <li>1. 57 lived in private houses or apartments (often with parents), 8 in apartment projects with shared attendant services, and 4 in institutions.</li> <li>2. &gt;50% had to move to new residence due to injury.</li> <li>3. Half of the respondents reported their current accommodations were determined by them having a physical disability.</li> <li>4. The greatest single predictor of residential satisfaction is perceived current residential choice.</li> <li>5. Residential satisfaction was correlated to life satisfaction; one's living accommodations are central to one's life situation.</li> </ol>

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Forrest & Gombas 1995 USA Observational Level 5 N=105	<p><b>Population:</b> 105 acute SCI participants (80M 25F); mean age 42 yrs (range 17-83); 63 with paraplegia and 42 tetraplegia</p> <p><b>Treatment:</b> No treatment. The purpose of study was to determine the frequency with which lack of accessible housing delays the discharge of an SCI subject, and the related costs of the delay.</p> <p><b>Outcome Measures:</b> Frequency and length of delay of discharge due to lack of accessible housing; cost of the delay.</p>	<ol style="list-style-type: none"> <li>1. Of the 105 participants included in the study, 11 stayed on the rehabilitation unit between 6-210 days longer than was medically necessary because of lack of accessible housing; the average delay in discharge was 60 days.</li> <li>2. The average cost of a 60-day stay at the institution was \$29,280, compared to \$1,620 at a transitional living unit, which translates to an average saving of \$27,660 per patient.</li> </ol>
Boschen 1990 Canada Observational Level 5 N=82	<p><b>Population:</b> 82 individuals with traumatic SCI (aged 18-35); mostly male with tetraplegia; age-matched data from the Institute of Behavioural Research Canadian Quality of Life data-bank (1981).</p> <p><b>Treatment:</b> No treatment. The purpose of the study was to compare life satisfaction, housing satisfaction, and locus of control between individuals with SCI and non-disabled individuals.</p> <p><b>Outcome Measures:</b> Living with a Spinal Cord Injury questionnaire composed of 29 items from the Canadian Quality of Life Survey and 60 items from Locus of Control Scale.</p>	<ol style="list-style-type: none"> <li>1. Life satisfaction and locus of control were significantly lower for individuals with SCI than for the normative sample.</li> <li>2. There was no significant difference in overall residential satisfaction; however those with SCI rated their housing problems as more serious, most often related to environmental barriers.</li> <li>3. Individuals with SCI who lived in private residences had significantly greater residential satisfaction than those in apartment projects; however life satisfaction was not impacted.</li> </ol>
Fuhrer et al. 1990 USA Observational Level 5 N=71	<p><b>Population:</b> 46 independent living centers (ILCs) which have relationships with one or more medical rehabilitation programs (MRPs); 25 MRPs which have relationships with at least one of the 46 ILCs recruited.</p> <p><b>Treatment:</b> No treatment. Purpose was to identify types and scope of relationships which exist between ILCs and MRPs and to identify barriers and facilities of these relationships.</p> <p><b>Outcome Measures:</b> Types of contacts which exist between the respondent's center and MRPs, and perceived barriers to a workable relationship with MRPs.</p>	<ol style="list-style-type: none"> <li>1. Most ILCs and MRPs reported making 'referrals to or providing information about' the other; and most ILCs reported 'peer counselling of MRP patients' and 'training in daily living skills'.</li> <li>2. 92% of MRPs reported use of ILC services to address housing, 84% for attendant care, 79% for transportation, and 67% for personal/ psychosocial problems, during discharge planning or outpatient follow-up.</li> <li>3. ILCs with MRP relationships served significantly more people monthly than those without MRP relationship.</li> <li>4. The use of ILC services was most frequent for individuals with SCI; &gt;70% of individuals with SCI required ILC peer counselling services, &gt;60% required skills training and &gt;55% required discharge planning services.</li> </ol>
Boschen et al. 1988 Canada Observational Level 5 N=82	<p><b>Population:</b> 82 persons (65M 17F); mean age = 28 (age range =18-35); 46 with tetraplegia.</p> <p><b>Treatment:</b> No treatment. The purpose of the study was to examine current accommodations, housing options, and preferences.</p> <p><b>Outcome Measures:</b> Questionnaire to identify factors influencing choices of</p>	<ol style="list-style-type: none"> <li>1. Seventy percent live in a private house or apartment, 19% live in an apartment project with shared attendant care services, 5% live in an institution, and 6% live in other accommodations; 69% live with one or more people and 31% live alone.</li> <li>2. Most important accommodation deciding factors in order are: location, wheelchair accessibility, family ties, finances, vacancy,</li> </ol>

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	accommodation; preferences of types of housing; and number of housing options perceived to have been available.	and attendant care availability. 3. Preferred accommodation was own house or apartment.
DeJong & Hughes 1982 USA Observational Level 5 N=33	<p><b>Population:</b> Retrospective population of 111 people with SCI who were discharged from rehabilitation; Current population of 33 members (20M 13F) of the Massachusetts Interagency Council on Independent Living (ICIL) (19 under 35 years old; 18 not disabled).</p> <p><b>Treatment:</b> No treatment. The purpose of this study was to develop a long-term outcome measure of independent living by identifying outcomes from previous research and ranking and weighing their relevance to current independent living.</p> <p><b>Outcome Measures:</b> Retrospective extraction of data relating to living environment and productivity; New survey for ranking and weighing living arrangements and productivity.</p>	<ol style="list-style-type: none"> <li>1. A greater weight is allocated to productivity (57%) than living arrangement (43%) when determining independent living.</li> <li>2. 'Living with spouse/significant other and/or children', 'living alone', and 'living with friends, unrelated persons, and/or siblings' were ranked and weighted as most positive living arrangements.</li> <li>3. 'Living with parents and with spouse and/or children', 'living with relatives such as grandparents, uncles, aunts, or adult children', and 'living with parents or with parents and siblings', were ranked and weighted as less desirable living arrangements.</li> <li>4. Living in an institution was ranked and weighted as least positive.</li> </ol>
Smith & Caddick 2015 Qualitative UK N=20	<p><b>Population:</b> 20 participants (15 males, 5 females), mean age of 31 years old, lived in a care home for an average of 2.3 years. 14 lived in a care home, 6 lived in the community having recently left a care home within the last 6 months.</p> <p><b>Treatment:</b> No treatment. The purpose was to examine the impact of being in a care home on health and wellbeing of people with SCI.</p> <p><b>Outcome Measures:</b> Semi-structured life story interview, approximately 2 hours on average in length. An interview guide was used to facilitate discussion (describe life and how it had been lived over time within a care home). An inductive thematic analysis was conducted on transcripts.</p>	<ol style="list-style-type: none"> <li>1. The following 3 themes were identified. Living in a care home environment severely damages quality of life, physical health and psychological well-being.</li> <li>2. The subthemes include a lack of independence, freedom, control, flexibility, inability to participate in community life, inability to sustain meaningful relationships, safety problems, restricted participation in work, leisure and physical activity, lack of meaning and self-expression, loneliness, difficulties with the rehousing process, depression, suicidal thoughts and actions.</li> </ol>
Dickson et al. 2011 UK Qualitative N=17	<p><b>Population:</b> 17 SCI participants (14M 3F); mean age: 46 yrs (range 26-62); YPI: 17 months to 32 yrs; injury level C5-C7.</p> <p><b>Treatment:</b> No treatment.</p> <p>The purpose of the study was to capture the experience of SCI from the perspective of the individuals with it.</p> <p><b>Outcome measures:</b> Analysis of recurring themes concerning difficulties adjusting to life post-hospital discharge: loss of camaraderie, lack of post-discharge care, other people's reactions to SCI.</p>	<ol style="list-style-type: none"> <li>1. Participants reported ongoing difficulties in adjusting to home life: 3 recurrent themes were: <ul style="list-style-type: none"> <li>- "loss of camaraderie"</li> <li>- "lack of post-discharge care"</li> <li>- negative experiences with other people related to being in a wheelchair</li> </ul> </li> </ol>

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<p>Kuipers et al. 2011 Australia Qualitative N=270</p>	<p><b>Population:</b> 270 participants with SCI (218M 52F); mean age: 43 yrs, (range 20-76); mean YPI: 16 yrs (range 0.75-55 yrs); injury level: 107 with complete quadriplegia; 100 with complete paraplegia; 63 with spared ambulatory ability. <b>Treatment:</b> No treatment. The purpose of the study was to explore and clarify the differing personal perspective of what a 'community' is. <b>Outcome measures:</b> Telephone interviews were conducted to analyze core themes concerning patients' communities, such as social integration, independence, and occupation.</p>	<ol style="list-style-type: none"> <li>1. In addition to descriptions of community as 'place', findings echoed the three dimensions commonly included in measures of community integration; "social integration", "occupation" and "independent living".</li> <li>2. Participants who described their community in social and relationship terms reflected generally positive views about that community, whereas those who described their community in terms of physical space and access expressed a relatively greater proportion of negative views when describing their community.</li> </ol>
<p>Bergmark et al. 2008 USA Qualitative N=22</p>	<p><b>Population:</b> 22 traumatic SCI participants; 16 male; mean age at injury 29.2 yrs (range 17-49); mean YPI: 14.4 yrs (range 2-37); injury level C1-C7. <b>Treatment:</b> No treatment. The purpose of study was to describe the factors which influence tetraplegic participants' residence decisions and the general pattern of residence among tetraplegic individuals. <b>Outcome Measures:</b> 15 open-ended questions, administered in an interview, either in person or on the phone.</p>	<ol style="list-style-type: none"> <li>1. Participants lived in 5 kinds of places post-injury: own or friends' homes, parents' home, group home/board and care, skilled nursing facilities (SNF), and rehabilitation facilities.</li> <li>2. Participants moved on average 3.3 times after discharge.</li> <li>3. Factors influencing residence moves include information, money, accessibility, insurance, intimate relationships, personal assistance and caregiving.</li> <li>4. Participants living in parents' home or institutions thought it was their "only option", and is seen as a "stepping stone" towards moving into their own homes, which is their goal.</li> </ol>