

## Spinal cord injury and family: implications for parental relationships and the functionality of the family system

*Lesiones de la médula espinal y la familia: implicaciones para las relaciones parentales y el funcionamiento del sistema familiar*

*Lesão medular e família: implicações para as relações parentais e a funcionalidade do sistema familiar*

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### Abstract

The aim was to identify the stressors that impact family adaptation and functionality after spinal cord injury. An integrative literature review, conducted from September 2024 to August 2025, in PubMed, LILACS, Scopus, SciELO, MEDLINE, BDNF, and BVS databases, using controlled descriptors. After screening 96,786 studies, 31 articles were included for analysis. The data were synthesized based on Betty Neuman's Systems Model, which considers extrapersonal, interpersonal, and intrapersonal stressors. The study showed a predominance of cross-sectional studies with a quantitative approach. Extrapersonal stressors (such as social and financial barriers and lack of support), interpersonal stressors (caregiver burden, family conflicts, isolation), and intrapersonal stressors (anxiety, depression, loss of identity, functional limitations) were identified as influencing family adaptation and the quality of care and rehabilitation. It has been found that spinal cord injury triggers profound changes that affect identity, autonomy, and social participation, requiring coping resources that go beyond physical recovery, including reinterpreting the lived experience. The presence of extrapersonal, intrapersonal, and interpersonal stressors exerts a significant influence on parental relationships and on the family functioning of people with spinal cord injury.

**Descriptors:** Family Relationships; People with Disabilities; Psychological Adaptation; Social Adjustment; Spinal Cord Injuries.

### Resumen

El objetivo fue identificar los factores estresantes que impactan la adaptación familiar y la funcionalidad después de una lesión de la médula espinal. Revisión integradora de la literatura, realizada de septiembre de 2024 a agosto de 2025, en las bases de datos PubMed, LILACS, Scopus, SciELO, MEDLINE, BDNF y BVS, utilizando descriptores controlados. Después de examinar 96,786 estudios, se incluyeron 31 artículos para el análisis. Los datos se sintetizaron con base en el Modelo de Sistemas de Betty Neuman, que considera factores estresantes extrapersonales, interpersonales e intrapersonales. El estudio mostró un predominio de estudios transversales con un enfoque cuantitativo. Los factores estresantes extrapersonales (como barreras sociales y financieras y falta de apoyo), los factores estresantes interpersonales (carga del cuidador, conflictos familiares, aislamiento) y los factores estresantes intrapersonales (ansiedad, depresión, pérdida de identidad, limitaciones funcionales) se identificaron como factores que influyen en la adaptación familiar y la calidad de la atención y la rehabilitación. Se ha constatado que la lesión medular desencadena cambios profundos que afectan la identidad, la autonomía y la participación social, requiriendo recursos de afrontamiento que van más allá de la recuperación física, incluyendo la reinterpretación de la experiencia vivida. La presencia de factores estresantes extrapersonales, intrapersonales e interpersonales influye significativamente en las relaciones parentales y en el funcionamiento familiar de las personas con lesión medular.

**Descriptoros:** Relaciones Familiares; Personas con Discapacidad; Adaptación Psicológica; Ajuste Social; Lesiones de la Médula Espinal.

### Resumo

Objetivou-se identificar os estressores que impactam na adaptação e na funcionalidade familiar após a lesão medular. Trata-se de uma revisão integrativa da literatura, realizada de setembro de 2024 a agosto de 2025, nas bases PubMed, LILACS, Scopus, SciELO, MEDLINE, BDNF e BVS, utilizando descritores controlados. Após triagem de 96.786 estudos, 31 artigos foram incluídos para análise. Os dados foram sintetizados com base no Modelo de Sistemas de Betty Neuman, que considera estressores extrapessoais, interpessoais e intrapessoais. Evidenciam predominância de estudos transversais e de abordagem quantitativa. Identificaram-se estressores extrapessoais (como barreiras sociais, financeiras e ausência de apoio), interpessoais (sobrecarga do cuidador, conflitos familiares, isolamento) e intrapessoais (ansiedade, depressão, perda de identidade, limitações funcionais), tais quais influenciaram a adaptação familiar e a qualidade do cuidado e da reabilitação. Constatou-se que a lesão medular desencadeia mudanças profundas que afetam identidade, autonomia e participação social, exigindo recursos de enfrentamento que vão além da recuperação física, incluindo ressignificação da experiência vivida. A presença de estressores extrapessoais, intrapessoais e interpessoais exerce influência significativa sobre as relações parentais e sobre a funcionalidade familiar de pessoas com lesão medular.

**Descriptoros:** Relações Familiares; Pessoas com Deficiência; Adaptação Psicológica; Ajustamento Social; Traumatismos da Medula Espinal.



## Introduction

Spinal cord injury (SCI) represents an unexpected traumatic event whose repercussions transcend the individual dimension and reach the entire family unit. The abrupt disruption to the previously experienced condition and daily life of the affected person demands immediate responses of adaptation and restructuring of the family routine. In this scenario, family members often assume the responsibility of ensuring adequate care conditions and seeking alternatives that preserve the patient's quality of life. However, the coping strategies used are strongly influenced by sociocultural, economic, and emotional factors, reflecting significant changes in family organization and functioning<sup>1</sup>.

SCI causes serious changes in the functioning of the body and in the daily life of the affected person. Those involved go through a period of intense learning and are abruptly immersed in a new and unknown world, having to deal with some limitations. Such changes demand physical, emotional, and social adaptations, determining the emergence of new lifestyle patterns. In this sense and considering that most people with SCI are young adults, it is of utmost importance that society is prepared to give them the necessary support, allowing them to return to their activities in a healthier way and encouraging them to feel productive<sup>2</sup>.

Similarly, caregivers of people with spinal cord injury may experience conflicting feelings as they face different tasks that require physical, psychological, social, intellectual, and financial resources. The family gives up routines and activities they usually carried out in their daily lives, such as leisure, work, and social life. Such changes in family dynamics can impact both the caregiver and the person being cared for, bringing to the surface stressors that can hinder their rehabilitation process<sup>3</sup>.

Following a traumatic spinal cord injury, the entire family needs to readjust to the new process faced by the injured person, becoming the central point of support in the rehabilitation process. Adaptation becomes a family affair, not just for the person who suffered the injury; its members must reorganize themselves after the event, changing their habits, lifestyles, and ways of functioning together to cope with the process. Therefore, family functionality is important, considering that the satisfaction of both the caregiver and the person being cared for is proportional to the quality of rehabilitation and care provided<sup>3</sup>.

It is worth noting that after the onset of a SCI, stressors become present in the individual's daily life, involving personal, social, and family factors. This stressful situation can correspond to the exhaustion phase, such as insomnia, decreased libido, and physical symptoms, reflecting the direct impact and consequences of the SCI on occupational, social, and family conditions, affecting individuals' work capacity and independence<sup>4</sup>.

Regarding stressors, the approach used is Betty Neuman's Theory, which focuses on the client's reaction to stress and on factors of reconstitution or adaptation, and is considered a suitable model for nursing care, as well as for all health care professions. This model allows visualization of

the individual within a context, the whole, such as the family to which they belong. Its structure presents an open systems model composed mainly of stressors, the reaction to stressors, and the individual interacting with the environment<sup>5,6</sup>.

In this sense, although the literature recognizes that spinal cord injury has a profound impact on family life, with role reorganization, caregiver burden, and psychosocial and economic stressors, there are still significant gaps in understanding which stressors are most associated with adaptation and family functioning after injury. Reviews indicate that many studies describe general impacts on families and caregivers, but investigations that identify and systematize specific stressors and their relationships with family outcomes are less frequent, which limits the comparability between studies and the proposition of targeted interventions.

Furthermore, there is a scarcity of standardized and specific instruments to assess family functionality in the context of spinal cord injury, especially considering the particularities of prolonged care, functional dependence, and rehabilitation needs. The absence of specific measures makes it difficult to monitor changes over time, stratify family risk, and evaluate the effect of family-centered support strategies.

Given the above and all the repercussions that spinal cord injury has on the affected individual and their family, this study aimed to identify the stressors that impact adaptation and family functionality after spinal cord injury.

## Methodology

This is an integrative literature review of a descriptive nature. Its elaboration followed six proposed steps<sup>7</sup>, namely: (1) identification of the theme and formulation of the research question; (2) definition of inclusion and exclusion criteria for studies and search strategies; (3) determination of the information to be extracted and categorization of the selected studies; (4) critical evaluation of the included studies; (5) interpretation of the results; and (6) presentation of the synthesis of knowledge. This systematization ensures greater transparency, methodological consistency, and reproducibility in the investigative process.

To formulate the research question for the integrative review, the PICO strategy (acronym for population/patient/problem, phenomenon of interest, and context) was used, structuring the following question: "What factors influence family dynamics and the adaptation process after the occurrence of a spinal cord injury in a family member?".

Data collection was carried out in the databases of Latin American and Caribbean Literature in Health Sciences (LILACS), Publisher Medline (PUBMED), Medical Literature Analysis and Retrieval System Online (MEDLINE), Nursing Database (BDENF), Virtual Health Library (BVS), and Scientific Electronic Library Online (SciELO). The following descriptors and keywords were used: "Family Relations", "Spinal Cord Injuries", "Family Adaptation", "Quadriplegia", and "Paraplegia". The descriptors were consulted in the



Health Sciences Descriptors (DeCS) and Medical Subject Headings (MeSH). For advanced database searches, three expressions were defined: “Family Relations AND Paraplegia OR Quadriplegia; Spinal Cord Injuries AND Family Adaptation; Family Adaptation AND Paraplegia OR Quadriplegia”. With the defined search terms, a total of 96,786 studies were found. Then, time filters (2008 to 2025) and language filters (Portuguese, English, and Spanish) were applied, resulting in a total of 53,098 articles, distributed as follows: 9,069 in LILACS, 8,107 in PubMed, 7,082 in MEDLINE, 2,696 in BDNF, 24,207 in BVS, and 1,937 in SciELO.

The studies found were screened according to previously defined inclusion and exclusion criteria. Inclusion criteria were: articles available in the selected databases, in Portuguese, English, or Spanish, dealing with people with spinal cord injury; addressing in the title, abstract, or body of the text the repercussions and impact of spinal cord injury on the family of the affected person; and addressing in the title, abstract, or body of the text family relationships, family functionality, or family adaptation of people with spinal cord injury. Exclusion criteria were: editorials; articles specifically addressing another type of disability, such as visual, auditory, feeding, or cognitive impairment; letters to the editor; and review studies. Articles found in more than one

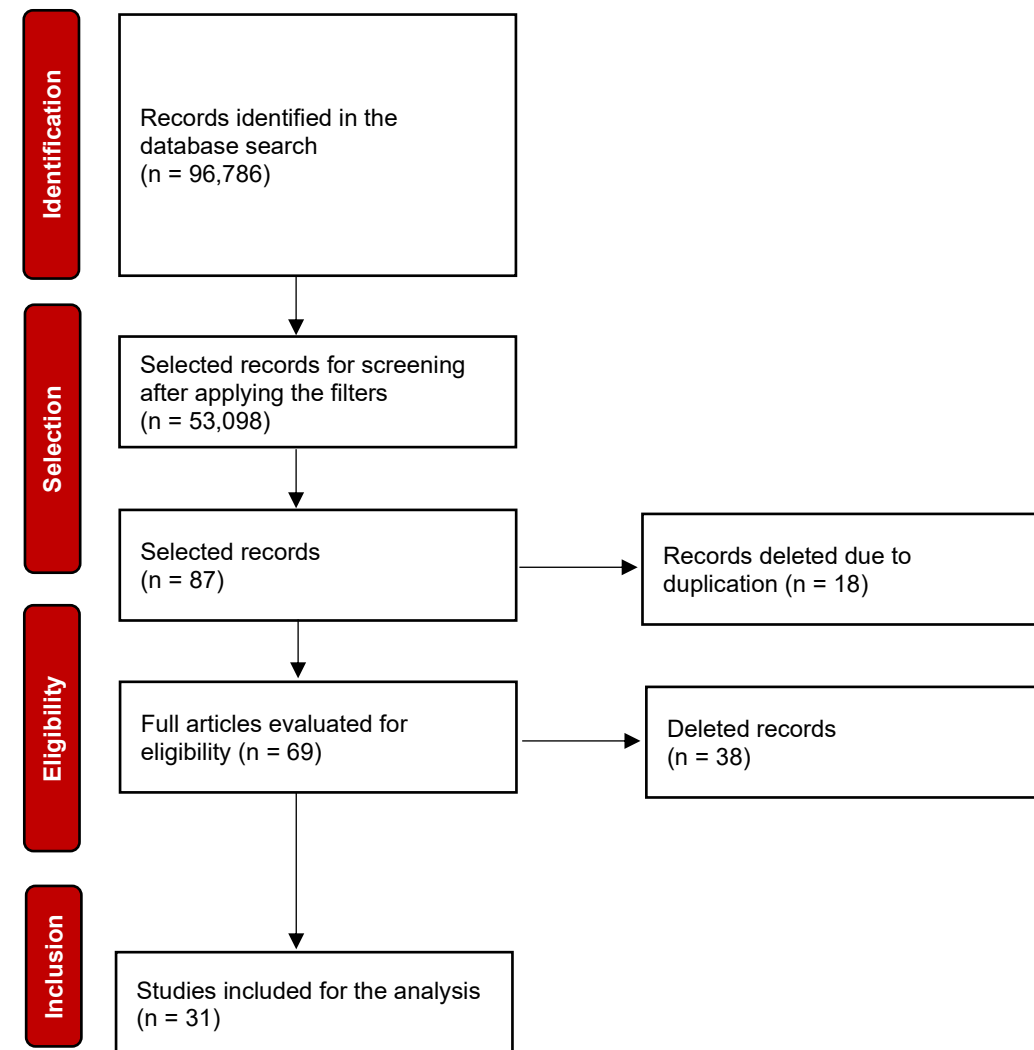
database were considered duplicates and automatically considered only once.

After applying the eligibility criteria, 87 articles eligible for the study were identified, which then proceeded to the next stage: full-text reading to identify those that satisfactorily answered the research question or were relevant to the study's objective. Finally, a sample of 31 articles was obtained for further analysis.

Data collection from the included articles was carried out using an adaptation of a validated instrument<sup>8</sup> and, for reference management, the Mendeley software, in its Desktop version, was used. The selected articles were systematized, as shown in Figure 1, using a document registration matrix based on the PRISMA protocol, recommended for the development of systematic reviews, bibliographic reviews, and meta-analyses.

The studies were read and reread, extracting the explicit or implicit factors that influenced family dynamics, functionality, or the family adaptation process. The analysis and synthesis of the data were based on Betty Neuman's Nursing Theory, grouping the identified factors into extrapersonal, interpersonal, and intrapersonal stressors<sup>9</sup>. Finally, the articles were classified according to the level of evidence and the Oxford recommendation grade<sup>10</sup>.

Figure 1. PRISMA Diagram. Campina Grande, PB, Brazil, 2025



Regarding ethical aspects, this study did not require review by the Research Ethics Committee, as it was a literature review without the direct involvement of humans.

**Results**

Regarding the study design, 77.41% are cross-sectional, with two of these being multicenter cross-

sectional studies. The most frequent approach was quantitative (61.29%). The most prevalent level of evidence and grade of recommendation in the studies were, respectively, 3B/B (41.93%), 2C/B (25.80%), and 4/C (22.58%), highlighting that there was one study with level of evidence 1B (3.22%) and grade of recommendation A (Chart 1).

**Chart 1.** Results of the review indicating authorship, year of publication, journal, country where the research was conducted, study design, approach, level of evidence, and grade of recommendation. Campina Grande, PB, Brazil, 2025

No.	1 <sup>st</sup> Author	Year / Journal	Study Design / Sample / Approach	Country / Instruments Used	Grade of Recommendation / Level of Evidence
1	Conti, A. <sup>11</sup>	2008 / Spinal Cord	Cross-sectional / 176 / Quantitative	Italy / Sociodemographic questionnaire; Modified Barthel Index (MBI); CBI-SCI; The Family Strain Questionnaire-Short Form (FSQ-SF); The Short Form-36 (SF-36)	B/2C
2	Dickson, A. <sup>12</sup>	2009 / Psychology and Health	Descriptive / 17 / Qualitative	Scotland / Semi-structured interview	C/4
3	Machado, W.C.A. <sup>13</sup>	2010 / Rev Esc Enferm USP	Descriptive Study / 08 / Qualitative	Brazil / Semi-structured interview	C/4
4	Rauch, A. <sup>14</sup>	2010 / Physical Therapy	Case Report / Qualitative	Switzerland / Instruments based on the ICF	C/4
5	Dyck, D.G. <sup>15</sup>	2011 / European Journal of Physical and Rehabilitation Medicine	Cross-sectional / 62 / Quantitative	Türkiye / Brief Ways of Coping Questionnaire and Hospital Anxiety and Depression Scale. ASIA impairment scale and Functional Independence Measurement (FIM)	B/3B
6	Herrmann, K.H. <sup>16</sup>	2011 / Spinal Cord	Cross-sectional Multicenter / 1052 / Quantitative	16 specialized study centres managing SCI individuals in 14 countries / CIF	B/2C
7	Courtois, F. <sup>17</sup>	2011 / BJU International	Cross-sectional / 97 / Quantitative	Canada and France / Questionnaire	B/3B
8	Barone, S.H. <sup>18</sup>	2012 / Journal of Neuroscience Nursing	Descriptive Study / 243 / Quantitative	USA / Health-Related Hardiness Scale e PAIS-SR	B/2C
9	Marchi, J.A. <sup>19</sup>	2012 / Ciência, Cuidado e Saúde	Experience Report / 02 / Qualitative	Brazil / Semi-structured interview	C/4
10	Hitzig, S. <sup>20</sup>	2012 / Arch Phys Med Rehabil	Cross-sectional / 618 / Quantitative	Canada / A.T. Jousse Long-Term Follow-Up questionnaire; Sociodemographics and impairment; Health and secondary health conditions; Satisfaction with life scale; RNL index	B/3B
11	Chun, S. <sup>21</sup>	2013 / Disability and Rehabilitation	Descriptive Study / 15 / Qualitative	USA / Interview	C/4
12	Guedes, A.C. <sup>22</sup>	2013 / Rev. Latino-Am. Enfermagem	Cross-sectional / 50 caregivers / Quantitative	Portugal / Barthel Index (IB); Mini-Mental State Examination Portugal / (MMSE); Burden Interview Scale (ZBI); Health Symptoms Checklist (HSC); Depression Anxiety Stress Scales; Carer's Assessment of Managing Index (CAMI)	B/3B
13	Muller, R. <sup>23</sup>	2013 / International Journal of Rehabilitation Research	Case Report / Mixed	Switzerland / Semi-structured interview guided by the ICF framework; open, unstructured meetings	C/4
14	Elliot, T.R. <sup>24</sup>	2014 / Journal of Consulting and Clinical Psychology	Analytical Study / 128 / Quantitative	USA / Functional Independence Measure (FIM); 15-item Relative Stress Scale; The Center for Epidemiological Studies Depression Scale; entre outros questionários adaptados para o estudo	B/2C
15	Munce, S.E.P. <sup>25</sup>	2014 / BMC Neurology	Descriptive Study / 26 / Qualitative	Canada / Semi-structured interview	B/3B



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16	Silva, S.C. <sup>26</sup>	2014 / Revista Brasileira de Educação Especial	Transversal / 54 families / Mixed	Brazil / Semi-structured interview; Family system characterization questionnaire	<b>B/3B</b>
17	De Groot, S. <sup>27</sup>	2015 / Disability and Rehabilitation	Cross-sectional / 158 / Quantitative	Netherlands / version of the Physical Activity Scale for Individuals with Physical Disabilities (PASIPD)	<b>B/3B</b>
18	Suriá-Martínez, R. <sup>28</sup>	2015 / Gaceta Sanitaria	Cross-sectional / 98 / Quantitative	Spain / Resilience Scale (Wagnild and Young, 1993) and the adapted version of the Quality of Life Scale (GENCAT)	<b>B/3B</b>
19	Herbert R.D. <sup>29</sup>	2016 / BMJ Open	Randomized Controlled Trial / 410 / Quantitative	Australia / Study-specific forms / Intervention study initiated in 2015	<b>B/2B</b>
20	Ozyemisci-Taskiran, O <sup>30</sup>	2017 / Journal of Spinal Cord Medicine	Cross-sectional / 14 / Qualitative	Türkiye / Semi-structured interview	<b>B/3B</b>
21	Palimaru, A. <sup>31</sup>	2017 / Quality of Life Research	Comparative Study (Cross-sectional) / 20 / Qualitative	UK and USA / Interview	<b>B/3B</b>
22	Ruiz, A.G.B. <sup>32</sup>	2018 / Revista da Rede de Enfermagem do Nordeste	Cross-sectional / 23 / Qualitative	Brazil / Semi-structured interview	<b>B/3B</b>
23	Scholten, E.W.M. <sup>33</sup>	2018 / Spinal Cord	Cross-sectional / 67 / Quantitative	Netherlands / Caregiver Strain Index; Short-Form Health Survey; Life Satisfaction Questionnaire	<b>B/3B</b>
24	Lise, F. <sup>34</sup>	2018 / Journal of Nursing UFPE	Cross-sectional / 200 people / Quantitative	Brazil / Sociodemographic form; The Assessment of Strategies in Family Effectiveness (ASF-E)	<b>B/2C</b>
25	Ruijter, L.S. <sup>35</sup>	2018 / Spinal Cord	Cross-sectional Multicenter / 265 / Quantitative	Netherlands / The Utrecht Scale for Evaluation of Rehabilitation-Participation (USER-Participation)	<b>B/2C</b>
26	Goulet, J. <sup>36</sup>	2019 / American Journal of Physical Medicine & Rehabilitation	Prospective Cohort / 195 patients / Quantitative	USA / Functional status and HRQoL questionnaires; SCIM-III; SF-36v2 questionnaire	<b>A/1B</b>
27	Jeyathevan, G. <sup>37</sup>	2019 / BMC Neurology	Descriptive / 19 / Qualitative	Canada / Semi-structured interview	<b>B/3B</b>
28	Jones, K.F. <sup>38</sup>	2019 / Clinical Rehabilitation	Cross-sectional / 100 / Quantitative	Australia / The functional assessment of chronic illness therapy, spiritual well-being scale, expanded was used to measure spirituality	<b>C/4</b>
29	Bossardi, C.N. <sup>39</sup>	2021 / Psicologia: ciência e profissão	Cross-sectional / 144 / Quantitative	Brazil / FACES IV and Family APGAR scales	<b>B/2C</b>
30	Rocha, M.A. <sup>40</sup>	2021 / Acta Paulista de Enfermagem	Cross-sectional / 54 / Quantitative	Brazil / Coping Modes Scale (EMEP) and Family APGAR	<b>B/2C</b>
31	Scholten E.W. <sup>41</sup>	2020 / Archives of Physical Medicine and Rehabilitation	Cohort / 155 / Quantitative	Netherlands / Hospital Anxiety and Depression Scale (HADS), McMaster Family Assessment Device (FADGF), Utrecht Scale for Evaluation of Rehabilitation (USER)	<b>B/2B</b>

**Chart 2.** Extrapersonal, interpersonal, and intrapersonal stressors identified in the literature. Campina Grande, PB, Brazil, 2025

<b>Extrapersonal Stressors</b>	<b>Authors</b>
Lack of Social Support; Absence of Social Participation; Absence of Community Participation; Social Barriers; Physical Barriers; Lack of Participation in Social Activities; Problems in Social Life; Problems in Civic Life; Lack of Social Adaptation; Lack of Social Support; Social Relationships; Deprivation of Rights; Social Distancing; Absence of Social Well-being; Lack of Sociability; Problem of Social Integration.	Barone; Waters, 2012 <sup>18</sup> ; Conti et al., 2018 <sup>11</sup> ; Goulet, et al., 2019 <sup>37</sup> ; Herrmann; Kirchberger; Biering-Srensen; Cieza, 2011 <sup>16</sup> ; Hitzig et al., 2012 <sup>20</sup> ; Marchi; Silva; Mai, 2012 <sup>19</sup> ; Muller; Raucha; Cieza; Geyha, 2013 <sup>23</sup> ; Palimaru et al., 2017 <sup>32</sup> ; Ruijter et al., 2018 <sup>35</sup> ; Ruiz et al., 2018 <sup>32</sup> ; Scholten et al.; 2018 <sup>33</sup> ; Suriá Martínez et al., 2015 <sup>28</sup> ; Bossardi et al., 2021 <sup>39</sup> ; Rocha et al., 2021 <sup>29</sup> .
Religion; Faith.	Chun; Lee, 2013 <sup>21</sup> ; Lise et al., 2018 <sup>34</sup> ; Marchi; Silva; Mai, 2012 <sup>19</sup> .
Financial; Acquisitions for injury-related adaptation; Lack of accessibility; Return to work; Family income.	Conti et al., 2018 <sup>11</sup> ; Marchi; Silva; Mai, 2012 <sup>19</sup> ; Munce et al., 2014 <sup>25</sup> ; Ruiz et al., 2018 <sup>32</sup> ; Scholten et al., 2018 <sup>33</sup> ; Bossardi et al., 2021 <sup>39</sup> ; Rocha et al., 2021 <sup>41</sup> .
Lack of educational support services; Lack of individualized support services; Lack of information about the new condition; Caregiver training.	Dyck et al., 2016 <sup>15</sup> ; Palimaru et al., 2017 <sup>32</sup> .
Lack of health education for people with spinal cord injury and their caregivers.	Hossain et al., 2016 <sup>29</sup> .
Changes in psychosocial functioning.	Jeyathevan et al., 2019 <sup>38</sup> ; Bossardi et al., 2021 <sup>39</sup> ; Eline et al., 2020 <sup>41</sup> .



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Relationships with friends; Distancing from friends.	Muller; Raucha; Ciezaa; Geyha, 2013 <sup>23</sup> ; Ruiz et al., 2018 <sup>32</sup> .
Caregiver Support.	Munce et al., 2014 <sup>25</sup> .
*****	
<b>Interpersonal Stressors</b>	<b>Authors</b>
Distancing; Isolation; Privacy; Limitation of social interaction; Interpersonal interactions; Interpersonal relationships; Restrictions.	Barone; Waters, 2012 <sup>18</sup> ; Chun; Lee, 2013 <sup>21</sup> ; Dyck et al., 2016 <sup>15</sup> ; Herrmann; Kirchberger; Biering-Srensen; Cieza, 2011 <sup>16</sup> ; Lise et al., 2018 <sup>34</sup> ; Rauch et al., 2010 <sup>14</sup> ; Rocha et al., 2021 <sup>40</sup> .
Discouragement; Lack of support; Lack of family support; Independence; Freedom of choice; Freedom of action; Restrictions caused by the injury; Dependence for activities; Deterioration of the relationship with the family; Support in daily activities; Burden due to excessive dependence; Dependence-inducing behaviors; Satisfaction with family members; Bonding with the family; Family support.	Chun; Lee, 2013 <sup>21</sup> ; Conti et al., 2019 <sup>11</sup> ; Goulet; Richard-Denis; Thompson Mac-Thiong, 2019 <sup>36</sup> ; Guedes; Pereira, 2013 <sup>22</sup> ; Jeyatheva et al., 2019 <sup>38</sup> ; Jones et al., 2019 <sup>39</sup> ; Machado; Scramin, 2010 <sup>13</sup> ; Munce et al., 2014 <sup>25</sup> ; Bossardi et al., 2021 <sup>39</sup> ; Rocha et al., 2021 <sup>40</sup> .
Post-traumatic divorce; Marital relationship.	Chun; Lee, 2013 <sup>21</sup> ; Silva; Dessen, 2014 <sup>26</sup> .
Home Adaptation; Internal Conflicts; Family Communication; Beliefs; Division of Household Tasks; Family Harmony; Conflicts; Lack of Dialogue; Family Cohesion; Protection/Overprotection; Family Health; Coherence; Family Restructuring; Family Mobilization Post-Injury; Changes in the Family Nucleus; Intense Changes in the Family Nucleus; Changes in the Family's Social Life; Emotional Support; Financial Support; Difficulty or Lack of Communication; Home Adaptation; Family Support in Financial Logistics; Caregiver Unpreparedness; Performing Household Tasks; Family Conflict.	Machado; Scramin, 2010 <sup>13</sup> ; Conti et al., 2018 <sup>11</sup> ; Silva; Dessen, 2014 <sup>26</sup> ; Lise et al., 2018 <sup>34</sup> ; Marchi; Silva; Mai, 2012 <sup>19</sup> ; Munce et al., 2014 <sup>25</sup> ; Ozyemisci-Taskiran; Coskun; Budakoglu; Demirsoy, 2017 <sup>30</sup> ; Palimaru et al., 2017 <sup>32</sup> ; Ruiz et al., 2018 <sup>32</sup> ; Timothy; Berry; Richards; Shewchuk, 2014 <sup>24</sup> ; Eline et al., 2020 <sup>41</sup> .
Reciprocity in care (caregiver); Change of role in the family; Lack of knowledge and skills necessary to adapt to caregiving and the situation; Caregiver burden.	Dickson et al., 2009 <sup>12</sup> ; Guedes; Pereira, 2013 <sup>22</sup> ; Scholten et al., 2018 <sup>33</sup> .
Infantilization after disability.	Palimaru et al., 2017 <sup>32</sup> .
*****	
<b>Intrapersonal Stressors</b>	<b>Authors</b>
Resistance; Lack of self-control; Depression; Anxiety; Negative emotions; Negative affect.	Barone; Waters, 2012 <sup>18</sup> ; Chun; Lee, 2013 <sup>21</sup> ; Dickson et al., 2009 <sup>12</sup> ; Guedes; Pereira, 2013 <sup>22</sup> ; Hitzig et al., 2012 <sup>20</sup> ; Jones et al., 2019 <sup>39</sup> ; Machado; Scramin, 2010 <sup>13</sup> ; Muller <sup>23</sup> ; Raucha; Ciezaa; Geyha, 2013 <sup>23</sup> ; Timothy; Berry; Richards; Shewchuk, 2014 <sup>24</sup> .
Unhappiness; Dissatisfaction; Identity Reconstruction; Feeling of Hopelessness.	Chun; Lee, 2013 <sup>21</sup> .
Sexuality; Sexual relations; Sexual sensations; Loss of sexual desire; Loss of sex and intimacy.	Courtois et al., 2011 <sup>17</sup> ; Dickson et al., 2009 <sup>12</sup> ; Jeyathevan et al., 2019 <sup>38</sup> .
Feeling like a burden; Dependence on others; Feeling worthless.	Machado; Scramin, 2010 <sup>13</sup> ; Muller; Raucha; Ciezaa; Geyha, 2013 <sup>23</sup> .
A physically active lifestyle.	Groot et al., 2015 <sup>28</sup> .
Restrictions; Reduction of leisure activities.	Ruijter et al., 2018 <sup>35</sup> .
Feelings of emptiness and loss; Feeling of loss of control over life; Feelings of guilt; Dissatisfaction; Acceptance; Loss of identity; Loss of hope for the future.	Dickson et al., 2009 <sup>12</sup> .
Mobility; Self-esteem; Sphincter dysfunction; Respiratory dysfunction.	Goulet, et al., 2019 <sup>36</sup> ; Hitzig et al., 2012 <sup>20</sup> .
Employment; Self-care; Mobility.	Herrmann; Kirchberger; Biering-Sørensen; Cieza, 2011 <sup>16</sup> .
Deterioration of relationships post-injury; Relationship rebuilding; Interdependence; Frustration; Anguish; Creating a new normal.	Jeyathevan et al., 2019 <sup>37</sup> .
Resilience; Life satisfaction.	Jones et al., 2019 <sup>38</sup> .
Dependency; Use of diapers.	Marchi; Silva; Mai, 2012 <sup>19</sup> .
Frustrations; Limitations; Activities of daily living; Lack of self-esteem.	Munce et al., 2014 <sup>25</sup> .
Disbelief.	Ozyemisci-Taskiran; Coskun; Budakoglu; Demirsoy, 2017 <sup>30</sup> .
Uncertainty.	Palimaru et al., 2017 <sup>31</sup> .
Limitations; Emotional changes; Feelings of distress; Dependence; Disability; Pain; Sexuality; Adaptation; Limitation; Self-control.	Rauch et al., 2010 <sup>14</sup> ; Ruiz et al., 2018 <sup>32</sup> ; Rocha et al., 2021 <sup>40</sup> .
Disability; Self-acceptance; Adapting to the experience of living with a disability; Coping; Physical well-being.	Suriá Martínez et al., 2015 <sup>28</sup> .

Considering the guiding question and Betty Neuman's theory, the factors extracted from the articles were grouped into stressors, namely extrapersonal, interpersonal, and intrapersonal, as shown in Chart 2.

**Discussion**

The analysis of the included studies reveals a predominance of cross-sectional (77%) and quantitative (61.29%) designs, an aspect that deserves critical

consideration in the interpretation of the findings. Although such designs contribute to the identification of associations and the description of phenomena at a given point in time, they present important limitations regarding causal inference and the understanding of dynamic adaptive processes, especially in contexts involving changes over time. The cross-sectional nature prevents the monitoring of the evolutionary outcomes, restricting the analysis of trajectories and the mediating variables involved.



In the theoretical field, Betty Neuman's Systems Model, which underpinned this study, presents itself as a relevant framework, as it understands the individual and their family as open systems in constant interaction with internal and external stressors. These systems are protected by lines of defense and resistance, which can be breached when exposed to intense stressors, requiring primary, secondary, and tertiary prevention interventions to restore balance<sup>42</sup>.

According to the theoretical model, stressors are any phenomena that can penetrate the lines characterized by Neuman as flexible and normal lines of defense, where each plays its own mechanism and function, thus potentially generating a positive or negative result. These reactions not only reveal the magnitude of the disruption caused by spinal cord injury in daily life but also highlight the need for interdisciplinary approaches that consider emotional, social, and psychological dimensions, to promote the adaptation and comprehensive rehabilitation of the individual and their support network<sup>43,44</sup>.

Furthermore, family members also experience emotional and psychological overload, which can compromise relationships and the functionality of the support network, hindering the patient's rehabilitation process. The stressors that impact this relationship can be intrapersonal, interpersonal, and extrapersonal, and have the potential to disrupt the stability of the system, causing physical, psychological, and social consequences<sup>42-45</sup>.

Among the main impacting factors identified in the literature reviewed, depression, anxiety, and negative emotions stand out as intrapersonal stressors, with these manifestations considered more "common" among people with spinal cord injury, as evidenced by the study conducted in 2018<sup>46</sup>.

Due to the new life conditions imposed, various feelings may arise in the affected individual, such as depressive symptoms, anxiety, and fear. In a study whose objective was to evaluate the level of depression in individuals with spinal cord injuries with pressure injuries, it was identified that half of the individuals presented depression, with mild to moderate and moderate to severe symptoms, due to body image distortion, self-deprecation, social withdrawal, and suicidal ideation<sup>47</sup>.

Furthermore, another study conducted in 2013<sup>48</sup> addresses the relationship between activities of daily living and the dependence of people living with spinal cord injury, resulting in feelings of dissatisfaction on the part of individuals, since increased dependence leads to loss of autonomy and, consequently, the emergence of feelings such as dissatisfaction, limitation, disability, and emotional changes<sup>4,30</sup>.

Home adaptation as found in the results<sup>1,3,9,15,16,24</sup> This is a potential factor in compromising the support network; therefore, this adaptation must occur positively, since the support offered to the individual by those around them directly influences the promotion of health, the prevention of other diseases, and the return to social activities that are directly related to the individual's capacity for autonomy and independence<sup>49</sup>. On the other hand,

families are not always prepared to provide balanced care, as the onset of spinal cord injury (SCI) mostly occurs unexpectedly, revealing that individuals lack the training to deal with the disability<sup>49</sup>. Therefore, health services must incorporate interprofessional practices that combine physical rehabilitation, psychological support, and health education strategies aimed at both the patient and caregivers, enabling the construction of new family dynamics and greater coping capacity in the face of the adversities imposed by spinal cord injury.

In the context of public health, Primary Health Care (PHC) stands out as a fundamental component in the rehabilitation of people with disabilities, organized according to the principles of universality, comprehensiveness, and equity. This structure allows multidisciplinary teams to accompany the individual and their family within their community, ensuring continuity of care, prevention of complications, and integration with other levels of the healthcare network<sup>50</sup>. In the specific case of SCI, the proximity of primary health care to the community is essential to promote acceptance, guide families, and strengthen therapeutic bonds.

It is essential that family members and healthcare professionals also provide opportunities for individuals with SCI to practice religion/spirituality, as this promotes autonomy and resilience, resulting in a considerable improvement in health and quality of life, and provides strength in coping with the disability<sup>51</sup>.

Religiousness/spirituality emerged in the results as extrapersonal stressors. In turn, these stressors are considered forces that occur outside the client's system, but that act upon it<sup>43</sup>. Other findings in the literature regarding this stressor involve the individual's absence from social interactions, participation in the community, and lack of support.

Furthermore, faith/spirituality, sports, and art were considered methods of coping with this reality, since they are mechanisms that make the individual active in their healing process and allow for socialization, well-being, and fulfillment<sup>52</sup>.

Given this scenario, the individual is required to mobilize internal and external resources, such as family, social, and institutional support, in addition to adopting coping strategies that favor progressive adaptation to the new way of life. This process is not limited to attempting to recover roles and positions prior to spinal cord injury but also involves the possibility of re-signifying the experience of loss, reconstructing meanings, redefining goals, and establishing new forms of social participation. Thus, successful coping is not only the resumption of interrupted functions, but the ability to develop a new balance between the imposed limitations and the still preserved potential<sup>53</sup>.

Interventions targeting individuals with spinal cord injuries should adopt a comprehensive approach, considering the physical, emotional, social, and family aspects involved in the rehabilitation process. Such interventions are an essential part of this process, as the condition can significantly impact the mental health and emotional well-being of the family. In this sense, the



literature indicates that structured approaches focused on the family context contribute to strengthening relationships, coping with adversity, and adapting to the changes imposed by the injury, thus favoring the reorganization of daily life and improving health outcomes<sup>54</sup>.

Therefore, understanding family dynamics allows not only the development of more individualized and realistic care plans, but also the prevention of caregiver overload and the creation of healthier support environments. Thus, ensuring comprehensive care for this population segment requires coordination between clinical, psychosocial, and educational actions, strengthening co-responsibility among the multidisciplinary team, patient, and family, and ensuring higher quality rehabilitation outcomes.

Limitations of the study included the established time frame, which may have led to the exclusion of investigations with greater methodological robustness, and the restriction to three search descriptors, which may have reduced the scope of the review. Nevertheless, the results presented offer relevant insights for advancing knowledge about family functionality in the face of spinal cord injury and reinforce the need for further research that delves deeper into this topic, contributing to improved healthcare planning and more qualified and humanized professional practices.

By highlighting the demands, vulnerabilities, and coping resources that affect the family and the caregiver, the findings support the planning of family-centered nursing

interventions, with the potential to improve care and promote rehabilitation. Furthermore, the study raises and reinforces the need for the development and validation of specific scales to assess the family functionality of individuals with spinal cord injuries, considering the particularities of this context, which can support clinical monitoring, risk stratification, and the evaluation of intervention outcomes.

### Final Considerations

The findings indicate that the presence of extrapersonal, intrapersonal, and interpersonal stressors exerts a significant influence on parental relationships and on the family functioning of people with spinal cord injury. The acquisition of a disabling and permanent physical limitation, such as spinal cord injury, demands special attention to the psychological, emotional, and adaptive aspects not only of the affected individual, but also of their family, which needs to reorganize and transform its entire life dynamic to accompany the rehabilitation process.

In this sense, it becomes essential that health services recognize the family as a central agent in this process, directing health actions that are effective, integrated, and capable of responding to emerging new demands. The use of validated instruments for assessing family functionality and planning care is an essential strategy for developing more precise, personalized, and effective interventions.

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