# Family functionality and coping strategies in people with spinal cord injury

## Funcionalidade familiar e estratégias de enfrentamento em pessoas com lesão medular

## Funcionalidad familiar y estrategias de afrontamiento en personas con lesión medular

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## Abstract

**Objective:** To analyze family functionality in view of coping strategies for people with spinal cord injury.

**Methods:** Cross-sectional study, developed in all 84 BHC in Campina Grande-PB, Brazil, in 2019. The population was composed of all 54 people with spinal cord injury registered in the Centers. A sociodemographic and clinical questionnaire, the Coping Modes Scale (CMS) and the Family Apgar were applied. Logistic regression was performed to estimate the odds ratio (OR).

**Results:** It was found that most of them were men, over 40 years old, non-white, with a religion, education up to elementary school, without a partner, with children, family income between 1-2 minimum wages, paraplegics, with injury time between 2-15 years, level of complete neurological impairment and traumatic cause. As for coping strategies, the most used were religiosity/fantasy thinking (M=4.09) and focused on the problem (M=3.93). Families were functional in 72% of cases. The logistic model showed probability relationships of focus on emotion (OR=0.539) (factor 2) and social support (OR=1.997) (factor 4) with family functionality.

**Conclusion:** The greater the use of strategies focused on emotion and the problem, the lower the family functionality, and the greater the use of social support strategies, the greater the chance of having good functionality.

## Resumo

**Objetivo:** Analisar a funcionalidade familiar face as estratégias de enfrentamento de pessoas com lesão medular.

**Métodos:** Estudo transversal, desenvolvido em todas as 84 UBS de Campina Grande-PB, Brasil, no ano 2019. A população foi composta por todas as 54 pessoas com lesão medular adscritas nas unidades. Foi aplicado um questionário sociodemográfico e clínico, a Escala de Modos de Enfrentamento (EMEP) e o Apgar de Família. Realizou-se a regressão logística para estimar o *odds ratio* (OR).

**Resultados:** Verificou-se que a maioria é composta por homens, acima de 40 anos, não brancos, com credo religioso, escolaridade até o ensino fundamental, sem companheiro, com prole, renda familiar entre 1-2 salários mínimos, paraplégicos, com o tempo de lesão entre 2-15 anos, nível de comprometimento neurológico completo e de causa traumática. Quanto as estratégias de enfrentamento, as mais utilizadas foram a de religiosidade/pensamento fantasioso (M=4,09) e com foco no problema (M=3,93). As famílias eram funcionais em 72% dos casos. O modelo logístico demonstrou relações de probabilidade do foco na emoção (OR=0,539) (fator 2) e suporte social (OR=1,997) (fator 4) com a funcionalidade familiar.

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**Conflicts of interest:** none to declare.

**Conclusão:** Quanto maior a utilização de estratégias focadas na emoção e no problema menor é a funcionalidade familiar, e quanto maior o uso de estratégias de suporte social maior é a chance de ter uma boa funcionalidade.

## Resumen

**Objetivo:** Analizar la funcionalidad familiar frente a las estrategias de afrontamiento en personas con lesión medular.

**Métodos:** Estudio transversal, realizado en las 84 Unidades Básicas de Salud de Campina Grande, estado de Paraíba, Brasil, en el año 2019. La población estuvo compuesta por las 54 personas con lesión medular registradas en las unidades. Se aplicó un cuestionario sociodemográfico y clínico, la Escala de Modos de Afrontamiento y el Apgar de Familia. Se realizó la regresión logística para estimar la *odds ratio* (OR).

**Resultados:** Se verificó que la mayoría está compuesta por hombres, de más de 40 años, no blancos, con creencias religiosas, escolaridad hasta la educación primaria, sin compañero, con hijos, ingresos familiares entre 1 y 2 salarios mínimos, parapléjicos, con tiempo de lesión entre 2 y 15 años, nivel de compromiso neurológico completo y de causa traumática. Respecto a las estrategias de afrontamiento, las más utilizadas fueron la religiosidad/pensamiento fantasioso (M=4,09) y el foco en el problema (M=3,93). Las familias eran funcionales en el 72 % de los casos. El modelo logístico demostró relaciones de probabilidad del foco en la emoción (OR=0,539) (factor 2) y el apoyo social (OR=1,997) (factor 4) con la funcionalidad familiar.

**Conclusión:** Cuanto más se utilizan estrategias centradas en la emoción y en el problema, menor es la funcionalidad familiar. Cuanto más se usan estrategias de apoyo social, mayor es la probabilidad de tener una buena funcionalidad.

## Introduction

Spinal cord injury (SCI) is a condition that causes neural death, inflammation and scar formation in the spinal cord, resulting in an interruption of nerve function.[1] This condition is associated with several economic, social and psychological consequences.[2]

It is believed that the incidence of SCI is approximately 10 cases per 100000 people worldwide, resulting in more than 700000 new cases per year. Regarding the prevalence, it is not known for certain due to the lack of notification of this condition.[2,3] In Brazil, it is estimated that the incidence is 16 to 26 new cases per million people.[4]

In view of the impasses experienced after the injury, it is common to trigger a process of psychological adjustment that can last a lifetime. The impairment of the individual's ability to perform some activities makes SCI a stressful factor, and it is essential to use coping strategies to reduce stress and cause psychological well-being.[5]

Coping strategies are cognitive and behavioral efforts to deal with the stressful event/cause.[6] Strategies can come in four main forms: focusing on the problem, focusing on emotion, fantasy/religious thinking and social support. Problem-focused strategies seek to directly affect the stressor. On the other hand, those focused on emotion are strategies used to deal with the emotion caused by stress.[6,7]

In this context, good family functioning is fundamental, since aspects such as adaptation, decision-making sharing and the time spent with family members are important for facing the conditions that the SCI imposes.[8] Therefore, the greater the familiar support that the individual with SCI has, the better the emotional adjustment and the use of coping strategies will be.[9]

Thus, the Family Health Strategy (FHS) is very important, since the definition of family and how it works leads to a better understanding of the practices that must surround in this context. Therefore, with the approach of the FHS professionals, conditions such as suffering, anxiety processes can be perceived, even from poorly coping with some condition, which were not previously observed.[10]

In this perspective, the investigation of family functionality and coping strategies is essential for better nursing care for this population, as well as the completion of actions that also involve not only affected individuals, but also their family. Thus, it is believed that these aspects will contribute to better condition of life, which involve psychological and family well-being.

In view of the justification, this study aimed to analyze associations between family functionality and coping strategies of people with SCI. Thus, the question that emerges from the study is: What is the influence of family functionality in the face of the use of coping strategies for people with SCI?

## Methods

This is a cross-sectional, analytical study, with a quantitative approach, developed within the scope

of all Primary Health Centers (PHC) in the city of Campina Grande, Paraiba, Brazil, in 2019.

The study population consisted of all people with SCI who were enrolled in any of the 84 Primary Health Centers (PHC) in the city. Therefore, a total of 54 respondents met the inclusion criteria: being 18 years old or older and presenting a SCI (complete or incomplete). On the other hand, the exclusion criterion was to have a plegia that was not due to SCI.

The approach and identification of the subjects took place through the home visit along with the Community Health Worker (CHA), because they knew the individuals who would be the focus of the research, took the researchers to the homes. This process was carried out in two moments: the first one was through the formation of a bond and explanation of what the research was about and, if the eligible individual agreed to participate, a second moment was scheduled for the application of instruments I, II and III.

Instrument I was used to investigate sociodemographic variables. Instrument II, named Coping Modes Scale (CMS), validated[11]. Thus is a questionnaire of the Likert type 1: "you never do this", to 5: "you always do this", composed by 45 items relating some attitudes and thoughts (strategies) in the face of a stressful event, which in this research is the SCI. CMS identifies four main coping strategies or factors, namely: coping strategies focused on the problem (Factor1); focused on emotion (Factor2); religious practices/fanciful thoughts (Factor3) and the search for social support (Fator4). Instrument III was designed to investigate Family Functionality: family APGAR, validated,[12] which aims to assess family functioning when questioning about the individuals' perception of their family. The global score can demonstrate High Family Dysfunction (one to eight points); Moderate Family Dysfunction (9 to 12 points) and Good Family Functionality (13 to 20 points).

The collected data were stored and analyzed using the STATA 14.0 program. After the descriptive analysis, the Cronbach's alpha reliability test was performed, which verifies the internal consistency of the instrument before the application in the sample, considering the alpha parameter > 0.8 for good reliability. About the internal consistency of the instruments applied, the Family Apgar and CMS were analyzed using Cronbach's alpha, with good reliability being verified according to the total alpha of the instruments of 0.869 and 0.853, respectively.

Binary logistic regression was used, which consists of a multiple regression that relates a dichotomous categorical variable, which in this research was Family Functionality (good functionality=1, dysfunctional=0), and continuous or categorical variables, being those that correspond the factors of the coping strategies (Factor1, Factor2, Factor3 and Factor4). To better adjustment of the model, clustering was performed using the cause of the injury (traumatic=1, and non-traumatic=0), with the control variables chosen because they theoretically affect some of the aspects studied. Therefore, this technique analyzed the probability of the event occurring, using the coefficients of each independent variable, with the measures of odds ratio (OR) and p-value <0.05. The stepwise procedure was performed to define the final models, as well as the Hosmer-Lemeshow adjustment test.

All ethical precepts were respected as recommended by Resolution 466/2012 of the National Health Council (NHC) and the project was approved by the Research Ethics Committee of UEPB with CAAE #09335319300005187 and opinion No 3225266.

## Results

Table 1 compiles the data on the sociodemographic and clinical profile of people with SCI. The findings demonstrate the predominance of: male (68.5%), over 40 years old (53.7%), with an average of 43.9, non-white (62.9%); with a religion (75.9%); education up to elementary school (62.9%); no partner (61.1%); with children (66.7%); and with a family income between 1-2 minimum wages (77.8%), considering R$ 998.00 as the value at the time of data collection. As for the clinical profile, most are paraplegic, with the injury time between 2-15 years, with an average of 12.74 years, level of complete neurological impairment and traumatic cause.

**Table 1.** Sociodemographic and clinical profile of people with SCI (n=54)

| Variables | n(%) |
|---|---|
| Gender | |
| Male | 37(68.5) |
| Female | 17(31.5) |
| Age | |
| 18-30 | 11(20.4) |
| 31-40 | 14(25.9) |
| 41-50 | 11(20.4) |
| >50 | 18(33.3) |
| Race | |
| Brown | 26(48.1) |
| White | 20(37.1) |
| Black | 8(14.8) |
| Religion | |
| Evangelical | 22(40.7) |
| Catholic | 19(35.2) |
| No religion | 13(24.1) |
| Education | |
| No education | 3(5.6) |
| Literacy | 3(5.6) |
| Elementary school | 28(51.6) |
| High school | 12(22.3) |
| Higher education | 8(14.9) |
| Marital status | |
| Single | 27(50.0) |
| Married | 19(35.2) |
| Widower/widow | 2(3.7) |
| Divorced | 4(7.4) |
| Stable union | 2(3.7) |
| Children | |
| Children | 36(66.7) |
| No children | 18(33.3) |
| Family income | |
| 1-2 minimum wages | 42(77.8) |
| >2 minimum wages | 12(22.2) |
| Injury time (years) | |
| <2 | 4(7.0) |
| 2-15 | 35(65.0) |
| 16- 48 | 15(28.0) |
| Type of plegia | |
| Tetraplegia | 12(22.2) |
| Paraplegia | 42(77.8) |
| Type of injury | |
| Complete | 29(53.7) |
| Incomplete | 25(46.3) |
| Cause of Injury | |
| Traumatic | 31(57.4) |
| Non-traumatic | 23(42.6) |

n- absolute frequency; % - relative frequency

Regarding the main coping strategies used by people with SCI, Table 2 shows the use of Religiosity/fantasy thinking (M=4.09), followed by Focused on problem solving (M=3.98) as the main factors.

**Table 2.** Measures of central tendency and dispersion of coping strategies for people with SCI

| Coping Strategies (Factors) | M | SD | Md |
|---|---|---|---|
| Focused on the problem | 3.98 | 1.688 | 5 |
| Focused on emotion | 1.33 | 1.082 | 1 |
| Religiosity/Fantasy Thinking | 4.09 | 1.581 | 5 |
| Social support | 2.96 | 1.812 | 1 |

M- Mean; SD- Standard Derivation; Md- Mode

As shown in figure 1, the family functionality radar (family Apgar) indicates that 72.2% (n=39) of the participants affirm that their families have good family functionality and, 27.8% (n=15) have some dysfunction.

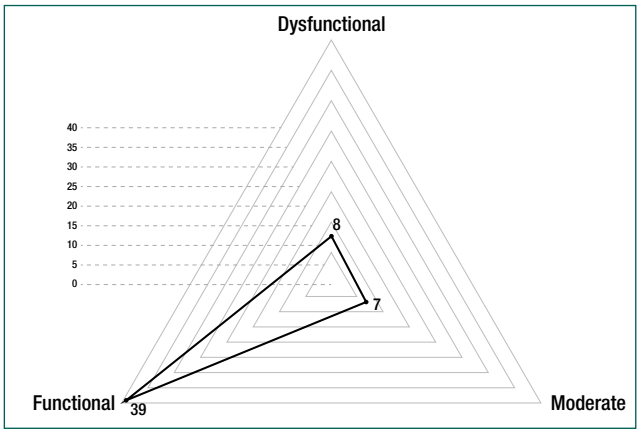


**Figure 1.** Family functionality radar (Family Apgar) for people with SCI.

The relationship between family functionality and coping strategies and clinical aspects is shown in table 3 with the logistic regression analysis. Model 1 (more complete) showed significance among all control factors and variables, except for factor 3 and divorced marital status. In factor 1, focused on the problem (OR 0.651; CI 0.490-0.865), there was a relationship with Family Functionality, so that the use of this strategy reduces the chances of having a good family functionality.

Still in model 1, with regard to factor 2, focused on emotion (OR 0.539; CI 0.319-0.910), the relationship demonstrated that the greater the use of the strategies, the lower the chances of having a good family functionality. In factor 4, social support (OR 1.997; CI 1.467-2.720), the regression demonstrated that the more this strategy is used, the chances of having a good family functionality are increased approximately twice.

Regarding the main control variables, it was observed that being Catholic (Relig2) (OR 21.10; CI 1.710-260.4) increases the chances 21 times of having a good family functionality, overlapping not having a religion or being evangelical. As for marital status, it is observed that being single (OR 111.1) increases the probability of having good functional-

**Table 3.** Logistic regression models adjusted between family functionality and factors of coping strategies and control variables

| Variables | (1) Family functionality | (95% CI) | p-value | (2) Family functionality | (95% CI) | p-value | (3) Family functionality | (95% CI) | p-value |
|---|---|---|---|---|---|---|---|---|---|
| Focus on the problem | 0.651*** | (0.490 – 0.865) | 0.003 | | | | | | |
| Focus on emotion | 0.539** | (0.319 – 0.910) | 0.021 | 0.658*** | (0.532 – 0.813) | 0.000 | 0.657*** | (0.530 – 0.815) | 0.000 |
| Social support | 1.997*** | (1.467 – 2.720) | 0.000 | | | | 1.297*** | (1.104 – 1.523) | 0.002 |
| Injury time | 0.932*** | (0.892 – 0.975) | 0.002 | 0.952*** | (0.919 – 0.986) | 0.007 | 0.966*** | (0.954 – 0.978) | 0.000 |
| Catholic | 21.10** | (1.710 – 260.4) | 0.017 | | | | | | |
| Evangelical | 2.391** | (1.061 – 5.390) | 0.036 | | | | | | |
| Single | 111.1*** | (37.31 – 330.5) | 0.000 | | | | | | |
| Married | 13.67*** | (11.08 – 16.85) | 0.000 | | | | | | |
| Divorced | | | | 0.141** | (0.020 – 0.994) | 0.049 | 0.126*** | (0.049 – 0.322) | 0.000 |
| Number of children | 2.552* | (0.983 – 6.631) | 0.054 | 1.698*** | (1.227 – 2.352) | 0.001 | 1.580** | (1.089 – 2.291) | 0.016 |
| Constant | 2.197*** | (1.836 – 2.630) | 0.000 | 60.72*** | (15.88 – 232.1) | 0.000 | 37.44** | (1.185 – 1.183) | 0.040 |
| Hosmer-Lemeshow chi2(8) (10group) | 3.39 | | | 8.65 | | | 15.76 | | |
| Prob > chi2 | 0.9079 | | | 0.3724 | | | 0.0459 | | |
| Pseudo-R2 | 0.343 | | | 0.176 | | | 0.164 | | |
| Observations | 54 | | | 54 | | | 54 | | |

*** p<0.01, ** p<0.05, * p<0.1; CI- confidence interval; chi2- chi-square test

ity by 100 times, compared to other marital states. Finally, it is believed that having children (OR 2.552) increases the likelihood of having a good family function.

In models 2 and 3, the variables "Single" and "Married" (respectively) were suppressed because they had Odds Ratio very different from the other variables. After the stepwise procedure, these models suppressed the variables Factor1 (model 2 and 3) and Factor4 (model2). Therefore, the variables "single" and "married", despite generating a very different result, are important to contribute to the explanation of the model.

In addition, the pseudo R2 of model 1 (pseudo R2=0.34) was greater than model 2 (pseudo R2=0.17) and 3 (pseudo R2=0.16). Thus, model1 is considered to be the most adjusted and with the best explanatory power.

## Discussion

With regard to the sociodemographic profile, most of them are men and have low educational level, consistent with an international study, whose central objective was to describe the epidemiology of patients with SCI undergoing treatment, in which more than 80% of the individuals were men. This occurrence is explained by the fact that they are more susceptible, due to the social context in which they are inserted, to suffer traumatic injuries related to firearms, work and automobiles accidents.[13]

Regarding the level of education, it is believed that because they have physical weakness, which can cause social exposure, have not completed post-injury studies, that is why the elementary education predominates.[13] In addition, there is an association between low education and readiness for self-care, which favors exposures that have a high potential for health risks.

As for the age group, being over 50 years old, a Brazilian study carried out with fishing men with SCI presented a similar result, with an average of 50.2 years old.[14] This is in contrast to most studies in the area, which highlight the prevalence of SCI in young adults.[13,15,16] This discrepancy is explained by the difference in sample recruitment, as studies treat SCI due to traumatic causes, which are more prevalent in the young-adult age group, while this study considered traumatic and non-traumatic causes.[15]

Regarding the clinical characteristics related to SCI, the individuals in this study presented paraplegia, due to trauma, with a minor difference related to the type of injury impairment. Thus, two studies[17,18] developed in Sweden and China showed the same clinical conditions, being paraplegia, in 76% and 61% of cases, respectively, of traumatic origin and of complete/incomplete form, with no significant differences. Therefore, traumatic causes deserve

attention, as it is evident that most cases contribute to the occurrence of associated complications in the acute and chronic phase.[19]

Regarding coping strategies, most strategies groups focused on the problem and on religiosity/fantasy thinking, were the most used. The frequency of strategies to focus on the problem corroborates another study developed in Colombia with the same population.[20] Thus, strategies focused on the problem suggest strengths to face the stressful cause, which in this case is SCI, being associated with lower rate of depression and greater social adjustment.[21,22]

The use of coping strategies of a religious/fantasy type is related to having a religion. Thus, it is believed that spirituality interferes positively in physical and mental aspects, especially in people with chronic conditions, such as SCI, which results in a better coping with the situation imposed on it, improving aspects of Quality of Life (QOL) and reducing the occurrence of depression and anxiety, as concluded by a study carried out in Iran on religious coping.[23,29]

Religious practice is a facilitating strategy in coping with daily care and a powerful way of socializing. The perpetuation of a limiting condition calls for devices that alleviate this continuous tension. Considering that in order to achieve full well-being, which is the combination of biopsychosocial health, religious aspects benefit the psychological aspects that interact directly with physical and social health.[24,30] Thus, it is understood that nurses should consider these strategies in their care practices.

Furthermore, with regard to family functioning, it was considered good by most families, which corroborates a Brazilian study whose main objective was to identify the cohesion, adaptation, flexibility and family functionality of people with SCI, which showed that 61.4 % of the events presented good family functionality. However, there is still a considerable amount of family dysfunction, moderate or severe, which deserves to be highlighted, as it is believed that family construction helps the individual to go through several obstacles in the adaptation process, since this moment occurs together.[9,24]

The sharing of this universe with the support network that the family forms unveils a refuge for the person with SCI, constituting an environment that shelters zeal and solicitude, transcending them from the weight of the chronic condition to a universe of welcoming and sharing, legitimizing family affective bonds.[31]

Therefore, aiming at a humanistic and effective approach of nurses and other health professionals, it is essential that they pay attention to the family functionality during the rehabilitation process, since there are difficulties in the adaptive process to this chronic condition, both for the person with SCI and the family.[25]

As for inferential data, the proposed logistic regression demonstrated that the use of the focus factors on the problem reduces the chances of having a good family functionality. Thus, the focus on the problem is related to efforts to solve the factor that causes stress, since the presence of the chronic condition within the family can interfere with its structure, since this adaptation works together.[24]

Another important issue is the appearance of post-traumatic stress, in which family relationships may be fostering protectionist functions or even aggravating the condition, in the face of a dysfunctional family.[32] In this context, the individual may seem decisive in changing the situation, but sometimes with a dysfunctional family. A Brazilian study on family functionality in people with SCI demonstrated that, despite good functionality, there is dissatisfaction with the family, especially in communication.[9]

Another investigation of a similar method carried out in Mexico, with patients with permanent disabilities, showed that most of the sample obtained good functionality (93.2%), and these people used strategies focused on stress (problem), which opposes the result presented here.[26] This contrast may be related to cultural and family differences between countries, as well as to the distinct peculiarities inherent in the levels of injury of the samples considered for the two studies.

As for factor 2 focused on emotion, it is believed that the use of these strategies reduces the chances of having good family functionality. The

focus on emotion is entirely filled with a high emotional charge, which can often generate mechanisms of distancing, as well as expressing deep feelings of guilt and blaming others, generating family conflicts and deconstructing good functionality.[11,27]

Factor 4, of social support, demonstrated that the more this strategy is used, it increases the chances of having a good family functionality by approximately twice. Thus, the search for social support, from friends or family, is configured as a strategy that aims to bring those around them closer to a better coping with the problem. A Brazilian study on the support network of people with SCI identified that the main support comes from the family, being responsible for the care and preparation for a better psychological adaptation of the individual.[26,28]

It is believed that the use of coping strategies in search of social support are fundamental in the family functioning of these individuals, the opposite being also true, which points to the eminent need for the use of mechanisms that involve family members in the rehabilitation process, especially when considering the psychological aspects.

The results provided reflections for the nursing praxis within the scope of the FHS, especially in the evaluation of the two aspects studied here. One of the ways to bring these particularities is in the nursing consultation and home visit to individuals with SCI, complying with the precepts of comprehensive care for people with disabilities.

This study has some limitations. First, it is believed that although the study is census, the population size has been reduced. Therefore, it is recommended that it be replicated in a larger scope. Second, the design of the study does not allow a causal relationship to be obtained because it does not allow the sample to be monitored over time.

## Conclusion

Probability relationships were found between the focus on the problem, emotion and social support, with the last one being positively related. Therefore, it is concluded that the greater the use of strategies focused on emotion and the problem, the lower the family functionality, and the greater the use of social support strategies, the greater the chance of having good functionality. Thus, nurses and other health professionals should include aspects of social support in their care plans, as they are part of the rehabilitation and recovery process for people with SCI.

## Collaborations

Rocha MA, Coura AS contributed to the design of the project, data analysis and writing. Feijão AR, França ISX, Almeida IJS and Aragão JS contributed to the relevant critical review of the intellectual content and approval of the final version to be published.

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