International Journal of Scientific Reports
Kulkarni P et al. Int J Sci Rep. 2021 Sep;7(9):454-458
http://www.sci-rep.com
pISSN 2454-2156 | eISSN 2454-2164
DOI: https://dx.doi.org/10.18203/issn.2454-2156.IntJSciRep20213260

Original Research Article

Prevalence of musculoskeletal problems in caregivers handling non-ambulatory spinal cord injury patients

Pranjali Kulkarni[1], Manish Ray[1]*, Ashok Shyam[2], Parag Sancheti[2]

[1]Sancheti Institute College of Physiotherapy, Pune, Maharashtra India
[2]Sancheti Institute of Orthopaedic and Rehabilitation, Pune, Maharashtra, India

Received: 09 June 2021
Revised: 17 July 2021
Accepted: 20 July 2021

***Correspondence:**
Dr. Manish Ray,
E-mail: manishrayis@gmail.com

ABSTRACT

Background: Spinal cord injury (SCI) is a distressing disorder that can cause of loss of physical, psychological and social functioning, that can cause high level of disability in patients. Due to disability, they are dependent on caregivers for their daily activities. Caregivers of SCI can be family or professional caregivers. Due to lack of training and awkward posture, caring for SCI patients may be burdensome which results in musculoskeletal problems in caregivers so it is important to find out the prevalence of musculoskeletal problems. The objectives were to find out the prevalence of musculoskeletal problems in caregivers handling non-ambulatory SCI patients and most common site of injury.
Methods: A cross sectional study was carried out on 80 caregivers including both professional and family caregivers. Self-structured validated questionnaire used to interview the caregivers based on convenient sampling. The data was analysed by descriptive statistics.
Results: The prevalence of musculoskeletal problems is 95% in caregivers including both family and professional caregivers. Low back pain was the commonest site of symptoms (53%) followed by 15% neck, 12% upper back pain, right shoulder (10%), right wrist (5%) and no pain (5%).
Conclusions: The prevalence of musculoskeletal problems in caregivers handling non ambulatory SCI is high. Most affected area is low back pain and neck pain. The findings of the study indicated that proper training and exercise are required, on means of preventing musculoskeletal problems.

Keywords: Spinal cord injury, Musculoskeletal problems, Caregivers, Prevalence

INTRODUCTION

SCI is a low incidence, high cost injury that shows tremendous impact in an individual's life. SCI is a serious disabling condition that can cause paralysis of muscles that lead to permanent disability.[1,2] SCI is defined as the damage to the spinal cord that results in loss of motor, sensory and autonomic function.[3] Paralysis of muscle below the level of injury can lead to altered mobility, self-care and ability to participate in valued social activities. In addition to the musculoskeletal system, many others body systems are affected in SCI such as cardiopulmonary, integumentary, gastrointestinal, genito-urinary and sensory systems. This condition also causes numerous complications including physical difficulties like pain, bowel bladder dysfunction, pressure sores, ulcer. Psychological impact of SCI is as important as physical impact. In patients with SCI, noticed changes in body images and sexual function, incontinence and having to rely on others to complete everyday tasks.

Rehabilitation is an important element towards achieving a fulfilling and active life after SCI. Caregivers of SCI

are an essential element in the neurorehabilitation team.[4] People with SCI need assistance from relatives or paid caregivers that is informal or family caregivers. A primary caregiver or informal caregiver is a family member who provide primary care, usually lives with them without getting paid and professional caregiver is one who assist the person in a way that enables them as live as independently as possible.

Caregivers of SCI generally aids with activities of daily living, leisure and professional activities.[5] To the severe consequences of SCI such as impaired body functions, activity limitations, they are fully dependent on caregivers for their support. Caregivers are the key to maintain the patient in the community, both prevention and treatment of patients, they may help to reduce the hospital stay by providing care at the home or at least reduce the visits to hospital.

Due to the constant and repetitive activities and constant burden of care on caregivers, therefore they may go through difficult circumstances may be physical or mental throughout the care. Burden of care can be defined as a multidimensional representation of negative appraisal and perceived stress resulting from taking care of the patient. Generally unique and tough challenges and long duration of care, caregivers of SCI patients are at risk of physical, psychological and social difficulties in comparison with caregivers of other chronic patients. Musculoskeletal health is an important aspect of physical health.[4] Caregivers may be at high risk of musculoskeletal problems due to manual handling of the patients with activities like positioning, lifting moving, transferring puts caregivers at high risk for musculoskeletal injuries. During these activities, tasks excessive forces are imposed on the musculoskeletal system of caregivers and forward transfer activities such as sit to stand, pivot transfer increases the risk of injury.[7] Due to lack of training, inadequate active coping strategies caregivers are at high risk of musculoskeletal problems. Recent literature has suggested that caregivers of SCI must adapt unique strategies in their lifestyle to provide care and prevent complication like bowl bladder dysfunction, ulcer, pressure sores.[9]

Despite the potential risk of musculoskeletal symptoms among caregivers, only few studies have addressed this matter, only one study involving SCI caregivers focused on low back pain. Due to the lack of information, there is a little information about effective prevention of musculoskeletal symptoms, inadequate information about safe patient handling.

The current study sought to find out the prevalence musculoskeletal problems in caregivers of SCI. The purpose of this study was to determine the prevalence of musculoskeletal complaints and to find out the most common site of injury.

METHODS

A cross-sectional observational study was done for a period of 4 months from December 2020 to March 2021 in neuro departments of tertiary care hospitals, community OPD, neurorehabilitation centres and from the community. The study included family and professional caregivers of SCI patients. Purposive sampling method was used. Sample size was calculated using G power software with alpha to be 5% and power to 80%. After taking informed consent on text or whatsapp message, a self-based questionnaire explained caregivers on telephonic based interview.

A self-structured questionnaire included demographic characteristics, occupation related questions, questions about site of pain and caregiving activities. Age group selected for this study included age group between 20-45. Working experience for caregivers at least 6 months and both males and females were selected. Pregnant women, person with history of diabetes, heart disease and caregivers of acute SCI patients were excluded from the study.

The collected data and was entered and analysed using descriptive statistics. Mean and standard deviation calculated for age and BMI. Prevalence was calculated by percentage method.

RESULTS

80 SCI caregivers participated in the study. They were 50 male (62.5%) and 30 females (37.5%). Mean (SD) age of caregivers of SCI was 34.75±0.8 years. Majority of caregivers participants were in age group between 25-29 (28.75%) (Table 1).

Table 1: Demographic data for age, BMI.

Demographics	Age (in years)	BMI (kg/m^2)
Mean	34.75	22.5
SD	±0.8	±2.94

The caregivers handling L1-L5 level of injury patients were 45% followed by C1-C4 level of injury 40%, T1-T6 level of injury 25%. From the recruited participants caregivers, 77.5% caregivers were family members or close relatives and 22.5% were paid caregivers.

From the 80 caregivers, 66.25% caregivers didn't consult any physician and 33.25% caregivers consult physician to their pain. 85% people didn't do any exercise or following up physiotherapy to their pain and 15% people follow exercise or following up physiotherapy for their pain (Table 2).

95% caregivers reported that they experienced musculoskeletal pain while 5% didn't experienced any pain (Figure 1).

Table 2: Questionaries.

Questions	Are you doing any exercise or following up for physiotherapy for the same ?	Does this pain limit or forces you to modify your daily routine ?	Have you consulted any physician?
No (in percent)	85	65	66.25
Yes (in percent)	15	35	33.75

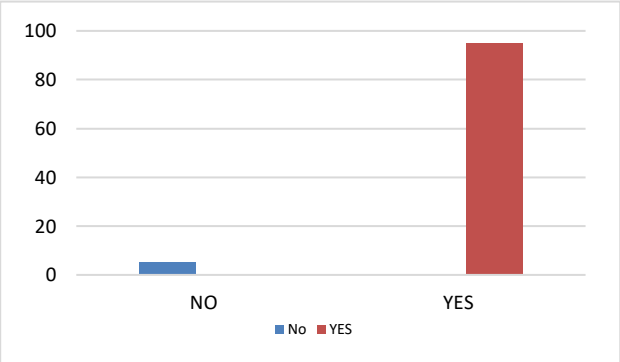

Figure 1: Pain due to caregiving activities.

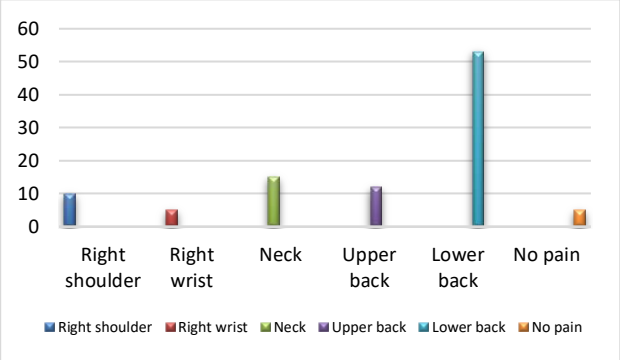

Figure 2: Location of pain.

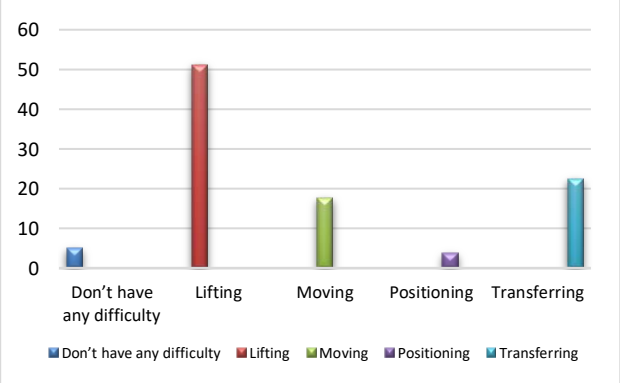

Figure 3: Activities difficult to perform due to caregiving activities.

Low back pain was the most affected body region (53%) followed by neck pain (15%), 12 people had upper back pain (12%). Right shoulder pain (10%), right wrist pain (5%) and didn't experienced any pain (5%) (Figure 2).

Majority of people 51.25% experienced difficulty in lifting, 22.5% in transferring. 17.5% moving, 17.5% and 3.75% in positioning and 5% with no difficulty (Figure 3).

DISCUSSION

In this study we tried to gain insight of the prevalence of musculoskeletal problems in caregivers handling non ambulatory SCI patients as well as most common site of injury. For this study we designed a closed ended questionnaire which included demographic questions such as age, gender, BMI and this questionnaire included the questions like working experience of caregiver, activity limitation and most common site of pain.

Individuals with SCI lose their ability to move and control body activities such a loss leads to feeling of powerlessness that was reflection of limitation and dependency. Consequently, the individual becomes dependent on the caregivers may be family or professional caregivers. Due to high level of dependency, burden of care on caregivers was high. Due to repetitive exposure to high burden of care there was high chances of musculoskeletal problems in caregivers. Study done on caregivers of individuals with SCI, caregiver burden states that caregiver burden was higher for the environment, disappointment and general strains of domains.[11] There was no significant correlation between sociodemographic characteristics and burden of care. Another study done on caregiver burden in rehabilitation of patients with neurological deficits following traumatic SCI stated that majority 44% caregivers had moderate burden.[10] Employment status and education of caregiver were found to be significantly correlating with care of burden.

In this study prevalence of musculoskeletal problems in caregivers was found to be high (95%) and majority of the caregivers experienced musculoskeletal problems. Study done in Nigeria, 82.2% caregivers reported musculoskeletal pain seven days prior to the study, 91.9% experienced onset within 3 months of caregiving.[6] A study involving informal caregivers of elderly people with physical disabilities in the United States however reported a 95%, 1 month prevalence.[6] Another study done on caregivers found that 94% musculoskeletal discomfort.[4] Unavailability of data in the musculoskeletal symptoms in caregivers of SCI or even other disabilities precluded more relevant comparisons.

In the current study, prevalence of low back pain was much higher than other body parts (53%), followed by neck (15%) and upper back (12%) least seen in right shoulder (10%) and wrist pain (5%). However, study in

Nigeria had 72.7%, 7 days prevalence for low back pain and 12 months prevalence was 44%.[6] Respectively in the study conducted among nurses and physiotherapist in Nigeria showed prevalence of 69.8%.[6] A study done in turkey showed that 82.8% of stroke caregivers experienced low back pain while another study in the united states among informal caregivers in elderly people show 76% prevalence, another study done in turkey on SCI caregivers stated that 1 year prevalence was significantly high. In one more study, they compared LBP among female caregiver of children with physical disabilities and caregivers of children with endocrinological problems, the prevalence of LBP was higher among female caregiver of children with physical disabilities.[6,15]

In the present study we found that caregiving activities were difficult for the patient to do due to their pain, lifting were more difficult for the caregiver (51.25%), followed by transferring (22.5%), moving and positioning were less difficult for the caregiver to do. A study done by on safe patient handling and movement stated that caregivers provided regular patient handling tasks including lifting, transferring, ambulating and positioning the patients placing them at high risk for musculoskeletal disorders, they suggested safe patient handling programmed that decreased injuries.[7] Another study done stated that most of the caregivers reported their symptoms were either causes by or worsen by caregiving activities.[4] They found out that transfer was physically more demanding. According to study, transferring of the patient more attributed to cause musculoskeletal discomfort in nursing and rehabilitation personnel. But another study stated that frequency and duration of the lifting and transferring activities also mattered.[7]

Lack of training and unsafe patient handling increased the chances of musculoskeletal discomfort in caregivers of SCI similar to that statement one study done in Turkey stated that 94.4% of the caregivers never received any kind of formal training or education about how to handle patients safely.[6]

In our present study, 65% caregiver said that they affected their daily routine due to pain only few went to consultant or take physiotherapy for experimental studies on effective preventive strategies for musculoskeletal symptoms required due to lack of evidences.

CONCLUSION

From this study it can be concluded that majority of the caregivers are suffering from musculoskeletal pain. The most commonly affected area is the low back pain and neck pain. Most of the caregivers reported lifting and transferring were difficult to them due to their pain.

The findings of the study indicated that proper training and education and giving proper exercise are required, on means of preventing musculoskeletal problems in caregivers handling non ambulatory SCI patients.

ACKNOWLEDGEMENTS

The authors would like to take this opportunity to thank the Principal Dr. Apurv Shimpi and my guide Dr. Manish Ray for giving valuable inputs. We would also like to thank all the caregiver participants, who volunteered to become the part of this study. We thank Dr. Parag K. Sancheti (MS orthopaedics), Dr. Ashok Shyam (research officer and MS orthopaedics) and institutional ethical committee of Sancheti, for their constant support and guidance in conducting this research study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee

REFERENCES

1. O'Sullivan SB, Schmitz TJ, Fulk G. Physical rehabilitation. 7th ed. FA Davis; 2019.
2. Ma H, Lu H, Xiong X, Yao J, Yang Z. The investigation of care burden and coping style in caregivers of spinal cord injury patients. Int J Nurs Sci. 2014;1(2):185-90.
3. Khazaeipour Z, Rezaei F, Ahmadipour E, Azarnia-Ghavam M, Mirzababaei A, Salimi N, et al. Burden of care in primary caregivers of individuals with spinal cord injury in Iran: its association with sociodemographic factors. Spinal Cord. 2017;55(6):595-600.
4. Darragh AR, Sommerich CM, Lavender SA, Tanner KJ, Vogel K, Campo M. Musculoskeletal discomfort, physical demand, and caregiving activities in informal caregivers. J Appl Gerontol. 2015;34(6):734-60.
5. Sultana S. Prevalence of musculoskeletal disorders among caregivers of person with disabilities in a rehabilitation centre in Bangladesh. Bangladesh Univ Health Sci. 2020.
6. Vincent-Onabajo G, Daniel H, Lawan A, Ali MU, Masta M, Modu A. Musculoskeletal symptoms among family caregivers of community-dwelling stroke survivors in Nigeria. J Caring Sci. 2018;7(2):59-66.
7. Mayeda J. Safe Patient handling and movement: literature review. Rehabil Nurs. 2014;39(3):123-9.
8. Iridiastadi H, Bayuardi A, Didin F, Yamin P. The prevalence of musculoskeletal complaints among hospital nurses and nursing home caregivers in Indonesia. Int J Technol. 2019;10(4):854.
9. LaVela S, Landers K, Etingen B, Karalius V, Miskevics S. Factors related to caregiving for individuals with spinal cord injury compared to caregiving for individuals with other neurologic conditions. J Spinal Cord Med. 2014;38(4):505-14.

10. Gopal V, Baburaj PT, Balakrishnan PK. Caregivers burden in rehabilitation of patients with neurological deficits following traumatic spinal cord injury. J Spinal Surg. 2017;4(1):9-13.
11. Nogueira PC, Rabeh SAN, Caliri MHL, Haas VJ. Caregivers of individuals with spinal cord injury: caregiver burden. Rev Esc Enferm USP. 2013;47(3):607-14.
12. Fragala G, Fragala M. Improving the safety of patient turning and repositioning tasks for caregivers. Workplace Health Saf. 2014;62(7):268-73.
13. Lynch J, Cahalan R. The impact of spinal cord injury on the quality of life of primary family caregivers: a literature review. Spinal Cord. 2017;55(11):964-978.
14. Bialon L, Coke S. A study on caregivers burden: stressors, challenges, and possible solutions. Am J Hosp Palliat Care. 2012;29(3):210-8.
15. Bardak A, Erhan B, Gűndűz B. Low back pain among caregivers of spinal cord injured patients. J Rehabil Med. 2012;44(10):858-61.
16. Shewchuk RM, Richards JS, Elliott TR. Dynamic processes in health outcomes among caregivers of patients with spinal cord injuries. Health Psychol. 1998;17(2):125-9.
17. Karahan A, Kav S, Abbasoglu A, Dogan N. Low back pain and among associated risk factors among hospital staff. J Adv Nurs. 2009;65(3):516-24.
18. Sharan D, Rajkumar J. The burden of caregiving: musculoskeletal disorders in caregivers of children with cerebral palsy: healthcare ergonomics. IEA. 2018:717-8.
19. Luan H, Hai NT, Xanh PT, Giang HT, Thuc PV, Hong NM, et al. Musculoskeletal disorders: prevalence and associated factors among district hospital nurses in Haiphong, Vietnam. Biomed Res Int. 2018;2018:3162564.
20. Bevans MF, Sternberg EM. Caregiving burden, stress, and health among family caregivers of adult cancer patients. JAMA. 2012;307(4):398-403.
21. Rezaei H, Nikisma HS, Gheshlagh R. Burden of Care in caregivers of Iranian patients with chronic disorders: a systemic review and meta-analysis. Health Qual Life Outcomes. 2020;18(1):261.
22. Bekdemir A, Ilhan N. Predictors of caregiver burden in caregivers of bedridden patients. J Nurs Res. 2019;27(3):24.
23. McDonald JW, Sadowsky C. Spinal-cord injury. Lancet. 2002;359(9304):417-25.
24. Jeyathevan G, Cameron JI, Craven BC, Munce SEP, Jaglal SB. Re-buildings relationships after a spinal cord injury: experiences of family caregivers and care recipients. BMC Neurol. 2019;19(1):117.
25. Kuzu D, Perrin PB, Pugh M. Spinal cord injury/disorder function, affiliate stigma, and caregiver burden in Turkey. PM R. 2021.
26. Jeyathevan G, Cameron JI, Jaglal SB. Identifying required skills to enhance family caregiver competency in caring for individual's with spinal cord injury living in the community. Top Spinal Cord Inj Rehabil. 2019;25(4):290-302.
27. McColl M, Aiken A, McColl A, Sakakibara B Smith K. Primary care of people with spinal cord injury. Can Fam Physician. 2012;58(11):1207-16.
28. Barbara, Sherwood PR, Charles. What Knowledge and Skills Do Caregivers Need. AJN, Am J Nursing. 2008;108(9):28-34.
29. Beauregard L, Noreau L. Spouses of persons with spinal cord injury: impact and coping. Bri J Soc Work. 2010;40(6):1945-59.
30. Nogueira PC, Rabeh SA, Caliri MH, Dantas RA, Haas VJ. Burden of care and its impact on health-related quality of life of caregivers of individuals with spinal cord injury. Revista Latino-Americana De Enfermagem. 2012;20(6):1048-56.
31. Merisalu E, Oha K, Freimann T, Sirk T. Prevalence of musculoskeletal disorders among office workers, nurses, and caregivers in Estonia. Occupat Environ Med. 2011;68(1):70.
32. DeFrança IS, Coura AS, deFranca EG, Basílio NN, Souto RQ. Quality of life of adults with spinal cord injury: a study using the WHOQOL-bref. Rev Esc Enferm USP. 2011;45(6):1361-8.

Cite this article as: Kulkarni P, Ray M, Shyam A, Sancheti P. Prevalence of musculoskeletal problems in caregivers handling non-ambulatory spinal cord injury patients. Int J Sci Rep 2021;7(9):454-8.