Psychological Impact on Resilience Among Persons with Spinal Cord Injury During Covid-19 Disaster

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Abstract

The World Health Organization (WHO) announced the outbreak of COVID-19 as a public health emergency of global concern on 30th January 2020. The uncertainty related to this pandemic has triggered mental health problems such as anxiety, depression, and stress among people with disabilities that includes persons with spinal cord injury. Persons with spinal cord injury are at a high risk of COVID-19 due to their clinical and social characteristics (Barman et. al 2021). Individuals with SCI experience various physiological changes that raise their risk of morbidity due to COVID-19. Resilience is considered a major psychological factor that could help persons with spinal cord injury to cope with the COVID-19 pandemic. Resilience was found to be positively associated with self-efficacy and negatively associated with depressive mood states. Due to the uncertainties and challenges posed by the COVID-19, the mental health of persons with spinal cord injury has become a serious concern (Mikolajczyk, B et. al 2021).

1. To study the socio-demographic profile of persons with spinal cord injury. 2. To assess the levels of depression, anxiety, and stress among persons with spinal cord injury during the COVID-19 lockdown. 3. To understand the level of resilience of persons with spinal cord injury during COVID – 19 pandemic.

Survey method was used for data collection. An e-questionnaire was developed with the help of the Google platform and used for data collection. We have used the snowball sampling technique to identify the participants and collect information.

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A total of 60 participants completed the survey. Of the total participants, 47 were males and 13 were females. Depression, Anxiety, and Stress Scale (DASS) and Connor–Davidson Resilience Scale were administered as e-questionnaires with the help of the Google platform in a specific google form.

During the COVID-19 lockdown persons with spinal cord injury had a higher level of depression (55 percent), anxiety (63 percent), and stress symptoms (43 percent). Persons with SCI (Spinal Cord Injury) in the age group of 21-30 years reported mild to extremely severe levels of depression (41.5 percent), anxiety (43.1 percent), and stress (33.2 percent) than the other age groups. An extremely severe level of depression (45 percent), anxiety (50 percent), and stress (35 percent) symptoms were found among unmarried persons with spinal cord injury. Among the persons with SCI, the overall resilience for the majority was "low" on the cumulative burden score. The level of resilience was high among the male respondents compared to their female counterparts. Further, unmarried (41.6 percent) respondents reported a higher level of resilience than married and divorced.

This study indicates that high levels of depression, anxiety, stress, and a low level of resilience among the persons with spinal cord injury during the COVID-19 pandemic lockdown. In the current crisis, it is vital to identify the individuals with spinal cord injury who are prone to mental health problems so that with appropriate interventions, the mental health of this population can be preserved. Healthcare providers and policy makers need to consider the findings and suggestions of this study to develop new health plans to address the psychological needs of persons with SCI during the time of pandemic and to manage the increasing mental illness in the future.

Keywords: *Anxiety, COVID-19, Depression, Pandemic, Resilience, Spinal Cord Injury, Stress*

1. Introduction

The World Health Organization (WHO) announced the outbreak of COVID-19 as a public health emergency of global concern on 30th January 2020 (Gallegos, 2020). To contain the spread of the virus, strict public health measures like avoidance of public

contact and quarantine have been implemented across the globe (Adhikari et al. 2020). The uncertainty related to this pandemic has triggered mental health problems such as anxiety, depression, and stress among people with disabilities including persons with spinal cord injury. Owing to the COVID-19 pandemic the elderly population and persons with pre-existing medical conditions are vulnerable to such a pandemic (WHO, 2020). Spinal cord injury (SCI) is associated with a life-long physical and psychological burden that challenges their well-being (Bonanno et al., 2012). Persons with spinal cord injuries are at a high risk of COVID-19 due to their clinical and social characteristics (Palipana, 2020). Individuals with SCI experience various physiological changes that raise their risk of morbidity from COVID-19 (Korupolu et al., 2020). The global COVID-19 pandemic has had a significant impact on populations across the globe and increased the concerns and anxiety of persons with SCI. A cross-sectional study from Ethiopia found that during the COVID-19 pandemic the prevalence of depression, anxiety, and insomnia was high among persons with disabilities.

The prevalence of depression and anxiety among the person with a disability was (46.2 percent) 186 and (48.1 percent) 194 respectively. The findings also revealed that multiple sociodemographic and disability-related factors were associated with this high psychopathology. The prevalence of depression, anxiety, and insomnia were more severe among the persons with disabilities who were single, divorced or separated, uneducated, and unemployed. Further, the results suggest that the government and other stakeholders need to intervene in psychopathology and its associated factors (Necho et al., 2020). Resilience is considered a major psychological factor that could help persons with spinal cord injury to cope with the COVID-19 pandemic. Resilience was found to be positively associated with self-efficacy and negatively associated with depressive mood states (Migliorini et al., 2015). Further, resilience serves as a protective mechanism against negative stressors (Southwick et al., 2014) and mediates the effects of COVID-19 related burden on depressive and anxiety symptoms and perceived stress (Rossi et al., 2021). Giving attention to the mental health of the persons with spinal cord injury during this pandemic is crucial. Several studies have linked COVID -19 with depression, anxiety, and stress. If it is left undiagnosed and untreated, mental illness can negatively impact the wellbeing of the person with SCI. The COVID-19 impact may play a significant role in worsening signs, symptoms, and development of mental health problems. Due to the uncertainties and challenges posed by the COVID-19, the mental health of persons with spinal cord injury has become a serious concern. There were no

empirical evidences in the Indian context focusing on the mental health of persons with Spinal Cord Injury during the Covid-19 pandemic. So, the purpose of the study seeks to explore the prevalence of depression, anxiety, and stress among persons with spinal cord injury as well as their resilience during the COVID-19 lockdown.

2. Materials and methods

The study followed a descriptive research design and used a survey method for data collection due to the COVID-19 and its implications. The rehabilitated persons with spinal cord injury from all over the states in India were invited for the study. The questionnaire was used to collect demographic details, depression, anxiety, stress, and resilience-related information. An online Google platform was used to develop an e-questionnaire and called a few persons with SCI over the phone with prior appointments. We have used the snowball sampling technique to identify the participants. Online informed consent was taken from all the participants as per revised ICMR guidelines for Biomedical and health research involving human participants before they answered the questions. The inclusion criteria are a) Rehabilitated individuals with either paraplegia or tetraplegia due to spinal cord injury. b) Age group between 18- 50 years. c) Duration of Spinal Cord Injury not less than 2 years. d) Persons with SCI who do not have access to internet facilities at home and android mobile phones were excluded from the study. E-questionnaire was sent to a total of 94 participants and a total of 60 participants completed the survey. Among participants, 47 were males and 13 were females. The time frame of the study is from June 2021 to August 2021. The data were analyzed with the help of SPSS version 21.

2.1 Measures

A sociodemographic information sheet was prepared to collect background information on the participants.

The *Depression Anxiety Stress Scale* (DASS-21) developed by Lovibond and Lovibond (1995) was used to assess depression, anxiety, and stress. There are 7 items for each subscale. The responses were collected on a 4-point rating scale ranging from 0 "didn't apply to me at all" to 3 "Applied to me very much or most of the time". A higher score reflects higher levels of depression, anxiety, and stress. The Cronbach's Alpha valve of the DASS for the study is 0.950 which has good internal consistency. The Pearson's

correlation valve is more than 0.25 of "r" table product-moment at 5% level of significance. Hence all the items in the DASS are valid.

The *Connor–Davidson Resilience Scale 25* (CD-RISC 25) comprises 25 items, each rated on a 5-point scale (0–4), with higher scores reflecting greater resilience. The scale can be administered to subjects in the following groups: community sample, primary care outpatients, general psychiatric outpatients, clinical trial of generalized anxiety disorder, and two clinical trials of Post-Traumatic Stress Disorder (PTSD). This scale explores seven domains of resilience: hardiness (i.e., commitment/challenge/control), coping, adaptability/flexibility, meaningfulness/purpose, optimism, regulation of emotion and cognition, and finally self-efficacy. Each of the 25 items is rated on a 5- point scale (0–4), with a possible total score ranging from 0 to 100 points. Lower scores indicate less resilience and higher scores indicate greater resilience.

3. Results

3.1 Understanding the profile of the respondents

Out of 60 persons with spinal cord injury (Table 1), the majority (71.7 percent) were male and 28.3 percent were female. The mean age of the respondents 29.8 years and ranged from 16 to 50 years, the majority (46.7 percent) being in the age group of 21- 30 years. The majority of the respondents were Hindus (63.3 percent), Christians (23.3 percent) and the remaining 23.3 percent were Muslims. Most of the persons with SCI are from (53.3 percent) rural background and residing in a nuclear family (71.7 percent). The educational background of the respondents varied at different levels from basic education to professional courses and among them, 36.7 percent have completed under graduation. The reported total monthly family income ranged from Rupees 1000 to 66,666 with a mean of Rupees 15,700 per month. Among the respondents, 36.7 percent of the persons who sustained injury were unemployed and 30 percent of them were students, 16.7 percent were self-employed, 6.7 percent have permanent employment in the government sector. The person sustained a spinal injury resulting from different mechanisms (Table - 2). 35 percent of the persons sustained spinal injuries from falls followed by 51.5 percent of road traffic accidents (RTA) 1.6 percent of the persons sustained injuries due to assault and Transverse myelitis is a non-traumatic spinal cord injury caused by inflammation in the spinal cord. 10 percent sustained injuries due to sports and recreational injuries (sports and leisure-

related injuries). The majority 88.3 percent of the respondents have undergone spinal surgery. Out of 60, 35 persons with SCI reported to have health complications such as pressure ulcers (15 percent), urine leaks (20 percent), pain (20 percent), and diabetes (3.3 percent). For mobility, the majority (78.3 percent) of them are using a wheelchair, 11.7 percent use Knee Ankle foot orthosis and crutches (KAFO), and the remaining 10 percent use walker and other mobility devices. Among the respondents Paraplegia (85 percent) refers arms functioning is spared but depending on the level of the injury, the trunk, legs and pelvic organs may be involved was more common the tetraplegia (15 percent) refers impairment of function in the arms as well as typically in the trunk, legs and pelvic organs, including the four extremities.

Table 1. Socio-demographic Profile of the Respondents

Variables	Frequency	Percent
Gender		
Male	43	71.7
Female	17	28.3
Age		
16 to 20 Years	8	13.3
21 to 30 Years	28	46.7
31 to 40 Years	18	30
41 to 50 Years	6	10
Religion		
Hindu	38	63.3
Christian	14	23.3
Muslim	8	13.3
Monthly Income		
Rs. 1000 to Rs. 5000	18	30.0
Rs. 5001 to Rs. 10000	16	26.7
Rs.10001 to Rs. 15000	7	11.7
Rs.15001 to Rs. 20000	3	5.0
Rs. 20001 to Rs. 25000	2	3.3
Above Rs. 25000	14	23.3

Education		
Primary School	2	3.3
High School	16	26.7
Under Graduate	22	36.7
Post Graduate	6	10.0
ITI	4	6.7
Diploma	3	5.0
Professional Course	7	11.7
Place of Residence		
Urban	28	46.7
Rural	32	53.3
Marital Status		
Married	13	21.7
Unmarried	44	73.3
Divorced/ separated	3	5.0
Occupation		
Government Employee	4	6.7
Private Sector	6	10.0
Business or Self-employed	10	16.7
Student	18	30.0
Unemployed	22	36.7
Family Type		
Nuclear	43	71.7
Joint	17	28.3

Table 2. Clinical Profile of the persons with SCI

Variables	Frequency	Percent
Duration of after injury		
1 to 5 Years	34	56.6
5 to 10 years	13	21.6
10 to 15 Years	4	6.6
15 to 20 Years	3	5.0

Above 21 years	6	10.0
Cause of SCI		
Fall	21	35.0
Motorcycle Accident	16	26.6
Car/Truck Accident	13	21.6
Pedestrian	2	3.3
Assault	1	1.6
Transverse myelitis	1	1.6
Miscellaneous	6	10.0
Spinal Surgery		
Yes	53	88.3
No	7	11.6
Mobility Aid		
Wheelchair	47	78.3
KAFO & Crutches	7	11.6
AFO & Crutches	1	1.6
Walker	2	3.3
Others	3	5.0
Injury Type		
Paraplegia	51	85
Tetraplegia	9	15
Health Complications		
Pressure Sore	9	15
Urine Leak	12	20
Diabetes	2	3.3
Pain	12	20
No Complication	25	41.7
Bladder Evacuation		
ICC	38	63.3
IDC	4	6.7
SPC	7	11.7
Self-Pass	11	18.3
Bowel Elimination		

DE/ DS	31	51.7
Suppository	9	15
Medicines	1	1.7
Self-Pass	19	31.7

3.2 Psychological impact among persons with spinal cord injury

The scores were classified according to the norms suggested by the authors of the DASS in terms of severity. Finding (Table 3) shows that a relatively minority were classified as being "normal" in relation to their level of depression (20 percent), anxiety (17 percent), and stress (28 percent). Similarly, the persons with SCI with "mild" depression (8 percent), anxiety (3 percent), and stress (5 percent) constituted a small group. The majority of them fall in the 'extremely severe' category with a higher level of depressive (55 percent), anxiety (67 percent), and stress (43 percent) symptoms. It is noted that (Table 4) male respondents had higher level of extremely severe depression (40 percent), anxiety (48 percent) and stress (31.6 percent) than their female (extremely severe depression (15 percent), anxiety (18 percent) and stress (11.6 percent) counterparts. The respondents in the age group of 21-30 years reported mild to extremely severe levels of depression (41.5 percent), anxiety (43.1 percent), and stress (33.2 percent) scores than the other age groups. An extremely severe level of depression (45 percent), anxiety (50 percent), and stress (35 percent) symptoms were found among unmarried persons with SCI. Further, the respondents living in the nuclear family scored mild to extremely severe levels of depression (58.2 percent), anxiety (61.5 percent), and stress (50 percent) scores than the respondents who were living in the joint family.

The respondents in the income group of 0 to Rs. 5000 reported extremely severe levels of depression (33.3 percent), anxiety (35 percent), and stress in severe level (42.9 percent) scores than the other income groups. Further, based on the education of the respondents, it was found that those who have completed under graduation have scored extremely severe levels of depression (36.4 percent) and anxiety (37.5 percent), whereas those who have done high school have scored extremely severe in stress (23.1 percent). The respondents living in the rural area reported extremely severe levels of depression (54.5 percent), anxiety (60 percent), and stress (53.8 percent) scores than those living in the urban area. The respondents who were unemployed reported extremely severe levels of depression (45.5 percent), anxiety (45 percent), and stress (46.2 percent).

Table 3. Distribution of respondents by severity across DASS sub-dimensions

Severity					
DASS variable	**Normal**	**Mild**	**Moderate**	**Severe**	**Extremely Severe**
Depression	12(20%)	5(8%)	6(10%)	4(7%)	33(55%)
Anxiety	10(17%)	2(3%)	5(8%)	3(5%)	40(67%)
Stress	17(28%)	3(5%)	7(12%)	7(12%)	26(43%)

Table 4. Distribution of respondents by sociodemographic details across DASS scale

Variable	Depression					Anxiety					Stress				
	Normal	Mild	Moderate	Severe	Extremely Severe	Normal	Mild	Moderate	Severe	Extremely Severe	Normal	Mild	Moderate	Severe	Extremely Severe
GENDER															
Male	10(16.6)	1(1.6)	5(8.3)	3 (5)	24(40)	8(13)	2(3.3)	1(1.6)	3(5)	29(48)	11(18.3)	3(5)	5(8.3)	5(8.3)	19(31.6)
Female	2 (3.3)	4(6.6)	1(1.6)	1(1.6)	9(15)	2(3.3)	0(0.0)	4(6.6)	0(0.0)	11(18.3)	6(10)	0(0.0)	2(3.3)	2(3.3)	7(11.6)
AGE															
16 – 20	1(1.6)	0(0.0)	1(1.6)	0(0.0)	6(10)	1(1.6)	0(0.0)	0(0.0)	1(1.6)	6(10)	1(1.6)	1(1.6)	0(0.0)	2(3.3)	4(6.6)
21 – 30	3 (5)	5(8.3)	2 (3.3)	2 (3.3)	16(26.6)	2(3.3)	1(1.6)	5(8.3)	1(1.6)	19(31.6)	8(13)	1(1.6)	3(5)	2(3.3)	14(23.3)
31 - 40	6(10)	0(0.0)	2 (3.3)	2 (3.3)	8(13.3)	5(8.3)	1(1.6)	0(0.0)	0(0.0)	12(20)	6(10)	0(0.0)	4(6.6)	2(3.3)	6(10)
41- 50	2 (3.3)	0(0.0)	1(1.6)	0(0.0)	3 (5)	2 (3.3)	0(0.0)	0(0.0)	1(1.6)	3(5)	2 (3.3)	1(1.6)	0(0.0)	1(1.6)	2(3.3)
MARITAL STATUS															
Married	5(8.3)	0(0%)	2(3.3)	1(1.6)	5(8.3)	4(6.6)	1(1.6)	0(0.0)	1(1.6)	7(11.6)	5(8.3)	1(1.6)	2(3.3)	1(1.6)	4(6.6)
Unmarried	7(11.6)	5(8.3)	3(5)	2(3.3)	27(45)	6(10)	1(1.6)	5(8.3)	2(3.3)	30(50)	12(20)	2(3.3)	3(5)	6(10)	21(35)
Divorced/ separated	0(0%)	0(0%)	1(1.6)	1(1.6)	1(1.6)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	3(5)	0(0.0)	0(0.0)	2(3.3)	0(0.0)	1(1.6)
RELIGION															
Hindu	6(10)	4(6.6)	6(10)	1(1.6)	21(35)	5(8.3)	1(1.6)	4(6.6)	3(5)	25(41)	10(16)	3(5)	4(6.6)	3(5)	18(30)
Christian	2(3.3)	1(1.6)	0(0.0)	2(3.3)	9(15)	2(3.3)	0(0.0)	1(1.6)	0(0.0)	11(18.3)	3(5)	0(0.0)	2(3.3)	3(5)	6(10)
Muslim	4(6.6)	0(0.0)	0(0.0)	1(1.6)	3(5)	3(5)	1(1.60	0(0.0)	0(0.0)	4(6.6)	4(6.6)	0(0.0)	1(1.6)	1(1.6)	2(3.3)
FAMILY TYPE															
Nuclear	8(13)	5(8.3)	3(5)	2(3.3)	25(41.6)	6(10)	2(3.3)	5(8.3)	1(1.6)	29(48.3)	13(21.6)	1(1.6)	4(6.6)	5(8.3)	20(33.3)
Joint	4(6.6)	0(0.0)	3(5)	2(3.3)	8(13.3)	4(6.6)	0(0.0)	0(0.0)	2(3.3)	11(18.3)	4(6.6)	2(3.3)	3(3.3)	2(3.3)	6(10)

3.3 Resilience among persons with SCI

The respondents were re-classified into low and high categories based on the median

score for the overall resilience as well as its sub-dimensions. Concerning the sub-dimensions of resilience, Table-4 reveals that the overall resilience for the majority was "low" on the cumulative burden score (52 percent) as well as its sub-dimensions such as their hardiness (55 percent), coping (52 percent), adaptability (62 percent), optimism (52 percent), regulation of emotions and cognition (53 percent) and meaningfulness (53 percent). Besides, 62 percent of the respondents had a higher level of resilience score in terms of self-efficacy. Out of 60 participants, 38.3 percent of male respondents had lower resilience than their female (13.3 percent) counterparts. The respondents residing in the rural area had a similar score for both low (26 percent) and (26 percent) high resilience. Further, the persons with SCI residing in the rural area had a higher resilience level than the persons from the urban area. The unmarried (41.6 percent) respondents reported a higher level of resilience than married and divorced. Besides, a low level (37 percent) of resilience was found among the persons with SCI living in a nuclear family. The persons in the age group of 21-30 years reported a lower level (25 percent) of resilience compared to other age groups such as 16-20, 31-40 and 41-50. Further, the respondents in the income group of 0 to Rs. 5000 reported a lower resilience level (61.1 percent) than the other income groups. Respondents who were unemployed had lower resilience level (81.8 percent) than those who Mμ were employed.

Table 5. Distribution of respondents on sub-dimensions of Resilience

Sub-dimensions	Low	High	Median
Hardiness	33(55%)	27(45%)	23
Coping	31(52%)	29(48%)	13
Adaptability	37(62%)	23(38%)	9
Optimism	31(52%)	29(48%)	5
Regulation of emotions and cognition	32(53%)	28(47%)	5
Self-Efficacy	23(38%)	37(62%)	6
Meaningfulness	32(53%)	28(47%)	11
Overall Resilience	31(52%)	29(48%)	75

Table 6. Results of Resilience

Variable	Resilience	
	Low	High
Gender		
Male	23(38.3%)	20(33.3%)
Female	8(13.3%)	9(15%)
Age		
16 – 20	4(6.6%)	4(6.6%)
21 – 30	15(25%)	13(21.6%)
31 – 40	7(11.6%)	11(18.3%)
41 – 50	5(8.3%)	1(1.6%)
Place of Residence		
Urban	15(25%)	13(21.6%)
Rural	16(26.6%)	16(26.6%)
Marital Status		
Married	10(16.6%)	3(5%)
Unmarried	19(31.6%)	25(41.6%)
Divorced/ separated	2(3.3%)	1(1.6%)
Family Type		
Nuclear	22(37)	21(35)
Joint	9(15)	8(13.3)

4. Discussion

Depression, anxiety, and stress are wide spread across the globe during the quarantine/ social isolation induced by the COVID-19 pandemic. During this pandemic social isolation, disrupted routines, and health services have greatly impacted the mental health of persons with spinal cord injury. The principal finding of the study shows that during the COVID-19 lockdown the persons with spinal cord injury had a higher level of depression (55 percent), anxiety (63 percent), and stress (43 percent) symptoms. It was found that males (71.7 percent) are more prone to spinal cord injury than females and this could be due to the fact that in most of the families, the males were the primary bread winners and have risk exposure. This is also reported by (Mathur et al. 2015) that

the males were four times more prone to SCI than females. The majority of the persons with SCI were in the age range of 21-30 which is in accordance with previous study by (Chamberlain et al. 2015) that a large number of spinal cord injury cases occurred in the age group of 16 to 30 and majority resulted in paraplegia. This is a disturbing state where active human resources are being seriously disabled and that impacted livelihood in many families (Mathur et al., 2015). We also found that persons in the age group of 21-30 years reported mild to extremely severe levels of depression (41.5 percent), anxiety (43.1 percent), and stress (33.2 percent) scores than the other age groups during the COVID pandemic. The unexpected joblessness and financial constraints have put persons with SCI in an unpleasant state, affected their socioeconomic and psychological well-being. Under normal circumstances, persons with spinal cord injury are less likely to access health facilities, education, and employment and the COVID -19 pandemic had further complicated the situation and impacted the persons with SCI directly and indirectly. Persons with SCI experience a myriad of physiological changes that develop the risk of morbidity from COVID-19 and may mask the clinical manifestation of the disease (Cristante et al., 2020).

Recent research evidence state that the COVID-19 pandemic has caused a significant rise in the prevalence of depression, anxiety, and stress symptoms (Rossi et al., 2021 and Salari et al., 2020). Indeed, it is not surprising that our findings showed that the majority of persons with SCI fall in the 'extremely severe' category in terms of depression, anxiety, and stress. Above normal levels of anxiety may weaken the immune system and develop the risk of contracting the virus (WHO, 2020). The persons sustained a spinal injury resulting from a different mechanism.

We found that road traffic accidents (51.1 percent) were the major causes for spinal cord injury and fall from hight is the second major cause for SCI (35 percent). Persons with disabilities are at higher risk of developing more severe health conditions due to COVID-19. They are more sensitive to co-morbidities, such as diabetes, heart disease, lung problems, and obesity that can worsen the outcome of COVID-19 infections (Singh et al., 2020). 35 (58.3 percent) persons with SCI had health complications such as pressure ulcer (15 percent), bladder leaks (20 percent), pain (20 percent), and diabetes (3.3 percent) thus, they are at the great risk of contracting COVID-19 and the lack of accessing health care facilities during pandemic worsen their condition. However, 41.7 percent had no health complications. (Migliorini et al. 2009) found a statistically

significant association between health and mental health outcomes and those with better health were less likely to be experiencing depression, anxiety, or stress.

Studies have shown that persons with profitable employment have better physical and mental health than those who are unemployed (Ipsen, 2006; Kamerade et al., 2019). Besides, unemployment, income inequality, and poverty are linked with poor physical and mental health due to the loss of income (McKee- Ryan et al., 2005). The economic recession due to COVID-19 had led to jobless of millions across the globe and for persons with disabilities this pandemic has posed new challenges to secure and maintain employment. In our study, we found that 36.7 percent of the population were unemployed due to SCI. Persons with spinal cord injury are more likely to lose their job and experience greater challenges returning to work and are at greater risk of developing mental health problems. For mobility purposes, we found that majority (78.3 percent) of the persons with SCI using wheelchair. Owing to the pandemic, persons with SCI who use a manual wheelchair must take extra precautions concerning handwashing and cleaning their devices because the coronavirus can remain on surfaces such as the hand rims and tires of wheelchairs, and wearing gloves when moving the wheelchair will help to protect and keep the hand clean (Cristante et al., 2020). An extremely severe level of depression (45 percent), anxiety (50 percent), and stress (35 percent) symptoms were found among unmarried persons. This was also reported by Kessler and Essex (1982) who found that the individuals who were single/divorced/ separated were more likely to have depression, anxiety, insomnia than their married counterparts.

Resilience seems to be important to cope with the COVID-19 pandemic implications (Holmes et al., 2020). Resilience is recognized as a protecting mechanism acting in the light of negative stressors (Southwick et al., 2014), and it is linked with better psychological well-being and lower mental health problems. The findings highlight that among the persons with SCI the overall resilience for the majority was “low” on the cumulative burden score (52 percent) as well as its sub-dimensions such as their hardiness (55 percent), coping (52 percent), adaptability (62 percent), optimism (52 percent), regulation of emotions and cognition (53 percent) and meaningfulness (53 percent). Besides, 62 percent of the respondents had a higher level of resilience score in terms of self-efficacy. The male (33.3 percent) respondents reported a higher level of resilience compared to their female (15 percent) counterparts. The education and employment opportunities given to the male in our country could be the reason

for higher resilience among the male (Peter et al., 2012). The respondents living in the rural area had a similar score for both low (26 percent) and (26 percent) high resilience levels. Further, the persons with SCI residing in the rural area had a higher resilience level than the persons from the urban area. The unmarried (41.6 percent) respondents reported a higher level of resilience than married and divorced. Besides, a low level (37 percent) of resilience was found among the persons with SCI living in a nuclear family. Aging increses the risk of COVID-19 and mortality, however, in this study we have found a higher level of depression, anxiety, stress, and low level of resilience among the young persons with SCI at the age group of 21- 30 compared to older age groups such as 31-40 and 41-50. Since this young age group is considered to be a key active working force in society, they are very much concerned about the future consequences and economic challenges caused by the pandemic (Moghanibahi- Mansourieh, 2020).

5. Implications for Intervention

The COVID-19 pandemic has given rise to one of the biggest social and economic crises of our generation that has paved the way for the exclusion of marginalized communities. The unprecedented public health emergency and the subsequent lockdown have impacted persons with spinal cord injury who are considered to be one of the most vulnerable populations during the crisis. Persons with disabilities are among the hardest hit by COVID-19 and if they contract COVID-19, they may develop severe health conditions. The findings of the study highlight the adverse psychological states experienced by persons with spinal cord injury and lower levels of resilience experienced by them across several domains. Alleviating the prevalence of anxiety, stress, depression symptoms and increasing the level of resilience of persons with SCI during the COVID-19 pandemic needs to be an area of intervention. Optimistic thoughts about the COVID-19 spread to persons with SCI will be a protecting factor to reduce anxiety and depression. Resilience plays a significant role in protecting persons with SCI from psychological distress and should be taken into consideration in health policies and treatment strategies. Offering counseling services through electronic media can reduce the psychological issues caused by COVID-19 (Wang et al., 2020). Persons with disabilities confront difficulties in accessing basic health services and as a result, they have poorer health outcomes than those without disabilities. Persons with SCI face unique challenges when accessing health care services, and show poorer

health outcomes than the general population due to various factors such as inaccessible facilities, financial constraints, and lack of accessible transport. Telemedicine for persons with SCI had several benefits like reducing travel time, costs associated with medical transport, and limiting the spread of infection to the vulnerable population (Stillman et al., 2020). Since the persons with SCI are more vulnerable to get affected with COVID-19 due to weaker immune systems thus, proper care should be given to this high-risk group those who are from low socioeconomic status, living alone, without close relatives, and with comorbid health conditions or other mental health conditions. To mitigate the effects of physical distancing and isolation, teleconferences can be encouraged. The health care professionals and organizations working for persons with disabilities can develop an alternative support system and promote public awareness of the consequences of the pandemics on persons with spinal cord injury. It is also important to involve persons with SCI, their families, and their caregivers in all the phases of the outbreak response.

6. Suggestions

The study highlights the need for mental health support to the persons with SCI, especially during the disaster like COVID-19. In order to achieve this we suggest that all the district hospitals should be equipped with specially trained mental health rehabilitation professionals to address the mental health issues of the persons with SCI. The intensity and severity of the problem have to be taken into account whenever new schemes are planned. A special mental health helpline number for persons with spinal cord injury can be thought of, with a follow-up monitoring system, so that it would help persons with SCI to overcome their mental health issues. Public Transportation should be accessible to persons with spinal cord injury which provides them access to participation in the community or peer group support system to reduce their psychological and mental issues.

7. Limitations of the study

The sample comprises primarily persons with SCI who have received rehabilitation services thus limiting the portability of our findings to those who have not received the rehabilitation. The study was conducted with a small sample size due to the pandemic and lack of technology such as android mobile, internet facilities in the population.

The findings of the study relevant to Indian spine populations and may differ with other counties due to sociocultural variations that limits the scope for generalization.

8. Conclusion

The COVID-19 pandemic has raised serious concerns over the persons with spinal cord injury. This study indicates high level of depression, anxiety, and stress among persons with spinal cord injury during the COVID-19 pandemic lockdown. According to our results, it can be concluded that the COVID-19 pandemic can affect the mental health of persons with SCI. Therefore, in the current crisis, it is vital to identify the individuals with spinal cord injury who are prone to mental health problems so that with appropriate interventions, the mental health of this population can be preserved. The findings of the study align with the spinal cord literature from other countries and point to key areas that need to be addressed through appropriate intervention. Healthcare providers and policy makers need to consider the findings and suggestions of this study to develop new health policy and plans to address the psychological needs of persons with SCI during the time of pandemic and to manage the raising mental illness in the future. The current study can be repeated with the large SCI population and include other variables to have a better understanding of depression, anxiety, stress, and resilience among them.

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