

Impact of sports on psychological status: Anxiety and depression for the spinal cord injury patients

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ABSTRACT

Aims: To explore the effectiveness of sports activities to improve the psychological status through progression in anxiety and depression level of Spinal Cord Injury patients. **Methods:** The design of the study was prior and after an experimental design of quantitative research. The data were collected from inpatient SCI Unit, Centre for the Rehabilitation of the Paralyzed (CRP), Bangladesh. The study involved thirtyone (31) male participants with SCI selected by conveniently and they were participating in sports three weeks. The assessor was blind (Single blinded study). The dependable variable was psychological status (anxiety and depression), assessed with Strait-trait anxiety inventory X2 for anxiety, Depression Measurement Scale and

Hospital Anxiety and Depression Score (HADS) - for Anxiety & depression. Independent variables included socio-demographic factors (age, sex, marital status etc), sports, type of paralysis and type of patients. Data analyzed by paired T-test considering the questionnaire as parametric Test in SPSS 20 version. **Results:** Analysis of difference revealed major positive change and reduced the anxiety and depression level of SCI patients after participating in sports. The mean age was 34.81 years and the paraplegic patient was 25 and tetraplegic 6, while the complete patient was 16 and incomplete 15. Mean score between Strait Trait Anxiety-X2 (STAI-X2) before 55.9 and after 45.9, Depression Measurement Scale (DMS) 104.9 and 76.3, Hospital Anxiety Depression Scale (HADS) for anxiety 13.1 and 10 and HADS for depression 13.7 and 10.3. There was significance variance within Scale. In addition, paraplegic and incomplete participants were more improved then tetraplegic and complete participants. The 'p' value of the variable is (<0.05). **Conclusion:** Sports activities play an important role to alleviate anxiety and depression level after spinal cord injury. Both were hampering their quality of life. The study would indicate that improvement was higher in paraplegic and incomplete person with SCI.

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INTRODUCTION

Spinal cord injury is the unanticipated and extemporary occurrence that may bring implausible change to injured people. It leads to comprehensive health-related problems [1]. The person with complete and incomplete SCI experienced with the temporary and permanent loss of motor function, loss of sensation below the lesion, which include loss of body function, loss of activities, participation restriction, and mobility. It leads to physical, social and employment activities impairment and harmful impression on person's health [2].

Several studies revealed that SCI increased the risk of psychological disturbance which may lead to depression and despondency. The negative effect on psychology correlated with the person with SCI. Poor psychological status aggravated the rate of suicide and drug addiction after the injury and half of large young adult associated with depression [3].

Another study found moreover one-fourth of inpatient spinal cord Injury patients suffer from depression. The exquisite impacts on mental health in the persons with spinal cord injury has been expressed by depression, anxiety and negative emotion through changes of behaviour, personality and perception [4, 5]. Moreover, social participation can be restricted and thus affects the quality of life [6].

Having depression and anxiety has been treated with diverse rehabilitation procedure. Sports activity are the vital therapeutic tool in the rehabilitation process [7]. In particular, many studies have suggested that sports activity reduce stress, depression, anxiety. Study elicited that wheelchair user who are engaged with athletic activity has better psychological status than wheelchair user who are not engaged with athletic activities. Whereas sports provided new life, better physical activity, better mobility for a disabled person and it also improved social participation and reintegration [8]. Individuals of SCI people who dynamically involved in sports and physical exercise, they had better quality of life within the physical, psychological, social and context field than physically inactive individuals [9].

The study revealed, participating in wheelchair sports activities has greater influence to improve psychological status that can be used as an effective intervention to manage depression [8]. Hence the study is focused on diverse sports and their effects on psychological status especially anxiety and depression for SCI persons in Bangladesh.

MATERIALS AND METHODS

Study design

Prior and after the experimental design of quantitative research was conducted with a single group. The design had no control group to compare with the experimental group. This design is valuable for rehabilitation professionals to better apprehend and determine effects resulting from selected interventions [10].

Study site and participants

The site of the study was Centre for the Rehabilitation of the Paralyzed (CRP) established in 1979 and working on a holistic approach to Rehabilitation and Community integration for people with disabilities.

The study population was patients admitted to SCI Unit, Centre for the Rehabilitation of the Paralyzed (CRP) Savar, Dhaka 1343. Currently, 100-bed indoor facility emerges from acute to reintegration phase and acute stage for 42 days, Stabilizing stage (2 weeks), Rehabilitation stage (2 weeks) and Re-integration (2 weeks). In 2015-16, a total of 358 patients (male 307, female 51) has been served [11] and the study carried out from February-March 2016 although it took approximately one year to collect the data. Thirty-one male participants conveniently selected for the study. Interested females were lower in number (n=1) and they were not interested to participate in sports activity.

Blind: Assessor blind (Single blinded study)

Subject Inclusion Criteria

- Both paraplegic and tetraplegic patient (C5 to L2)
- Completed minimum four weeks of rehabilitation and reintegration stages.
- Spinal cord injury patient who have their injury below C5 level.
- Age group: 15–65 years.
- Able to engage in sports at least three weeks.
- Complete and incomplete (ASIA A-E) both participant.
- Both male and female patient.

Subject Exclusion Criteria

- Higher tetraplegia patients.
- Acute injured SCI patient.
- Patients in bed rest.
- Patients who have pressure sore and any other disease.
- Patients in traction.
- Patients with the cognitive problem.
- A patient who were not willing to participate in the study.
- Patient with others mental or physical illness.

Ethical Consideration

Written and verbal consent has been taken from the patients. A research proposal was submitted for approval to the administrative bodies of ethical committee. The researcher applied for permission from Institutional Review Board (IRB) of Bangladesh Health Profession Institute (BHPI) and Clinical department of physiotherapy in CRP, Saver. The participants have explained the purpose and goal of the study. Subjects have participated voluntarily and they were also told that confidentiality would be maintained. Furthermore, the researcher would be available to answer any questions in regard to the study. All information was kept secure. Ensure patient safety. The study followed the World Health Organization (WHO) and Bangladesh Medical and Research Council (BMRC) guideline and strictly maintains the confidentiality.

Measurement tools

Participants were interviewed face to face using Bangla questioner. The questioner developed on the numerous scales. The scales are State-Trait Anxiety Inventory-X2 [5], Depression Measurement Scale which was developed by Zahir Uddin and Dr Mahmudul Rahman, Department of the clinical psychology [11] and Hospital Anxiety and Depression Score (HADS) for anxiety and depression measurement. Demographic data had 11-item questionnaire (age, sex, marital status, educational level, occupation, religion) and the health-related questioner (date of injury, type of injury, the cause of injury, level of injury).

Validity and reliability

State-Trait Anxiety Inventory- X2: 20 item has present for measure anxiety, while is used for SCI patients. The response of the individual to each item are on 4 point scale (1= rare to 4= often) [12].

Depression Measurement Scale: 30 item has been widely used for measure depression and it had 5 point scale (1= Not At all to Applicable to 5= Fully Applicable). The severity Norm of the Depression scale, minimal= 30- 100, mild= 101-114, moderate =115- 123, severe =124-150). Developed by: Zahir Uddin and DrMahmudul Rahman, Department of the clinical psychologist [11].

Hospital Anxiety and Depression Score (HADS) - for Anxiety & depression: 12 item with four point scale used for measurement the scoring are 0-7 = Normal, 8-10 = Borderline abnormal (borderline case), 11-21 = Abnormal (case) [13].

Intervention and parameters

All of the participants were actively participated in a three weeks sports program, one hour per day and weekly

five days. All sports were compatible with patient capacity and supervised by sports trainer. Wheelchair basketball, table tennis, ball throw, hand volleyball were selected for the person of SCI.

Data analysis

After participating in sports in the same way as the pre-test data are collected which gives the post-test score. Then calculate the difference between pre-test and post-test score. Data has been analyzed by paired T-test considering the questionnaire as parametric Test in SPSS 20 version.

Hypothesis

Engaging Sports Activities is an effective intervention for improving psychological status in anxiety and depression parameter of person with spinal cord injuries.

Significant levels

The hypothesis of the experimental study was one-tailed hypothesis because it was predicting a specific direction to the result. The 'p' value was <0.05 that was accepted by the researcher to show the significance of the study.

RESULTS

Socio-demographic information of the participants

Out of thirty-one participants, the mean age of SCI population was 34.8 years. Seventy-one percent married and twenty percent were unmarried. In family member 5 or less were 21.8%, 6 to 7 member 32.3% and 8 or more 41.9%. Among 19.4% no education, 32.3% primary, secondary 25.8%, and post secondary 22.6%. In the profession, there were several manual workers 54.8%, non-manual worker 29%, unemployed 16.1%. Types of paralysis, paraplegia were more 80.6% and tetraplegia 19.4%, according to ASIA complete 51.6%, incomplete, 41.4% and a thoracic lesion in more than others 58%. Health-related and socio-demographic presented in Table 1.

Difference between mean score of pre-test and post-test

State-Trait Anxiety Inventory- X2 (STAI-X2): Among thirty-one participants presented different level anxiety. It was measured by State-Trait Anxiety Inventory- X2 (STAI-X2) and it presented different mean score on different variables. The anxiety level was more

Table 1: Socio-demographic information of the participants

Socio-Demographic Information of the Participants	
Age	Mean 34.8
Marital status	
Married	71.0%
Unmarried	29.0%
Family member	
5 or less	25.8%
6 to 7 member	32.3%
8 or more	41.9%
Educational status	
No education	19.4%
Primary	32.3%
Secondary	25.8%
Post-secondary	22.6%
Profession	
Manual worker	54.8%
Non-manual worker	29.0%
Unemployed	16.1%
Health-Related Information	
Types of paralysis	
Paraplegia	80.6%
Tetraplegia	19.4%
Diagnosis According to ASIA	
Complete	51.6%
Incomplete	48.4%
Neurological level	
Cervical	22.6%
Thoracic	58%
Lumber	19

whose were suffered chronic injured patients, tetraplegic, and incomplete patients. The mean difference of duration of injury was 54.6 and 44.2, paraplegic were 55 and 44.9 and incomplete patients were 54.9 and 43.4. Table 2 showed mean difference of SIAI-X2.

Depression measurement scale

Table 3 has shown measurement of depression scale and the mean difference between pretest and posttest were 104.9 ±17.1 and 76.3 ±19.4. Depression scale evaluated that, acute injured people were significantly improved, but in this scale paraplegic patient’s depression level more reduced than tetraplegia and as like anxiety and incomplete patient more improved than complete (Table 3).

Hospital anxiety and depression score (HADS) - Anxiety Score has shown Pretest and posttest measurement, long duration highly significant than the short duration. According to HADS anxiety level of paraplegia patients have alleviated more than tetraplegia (Table 4). The mean difference between incomplete patients was 3.2 and the complete patient was 3. Incomplete patient extremely elevated rather than complete.

Hospital anxiety and depression score (HADS) – depression score

Similarly, Hospital Anxiety and Depression Score (HADS) scale for Depression level and the mean difference of long duration was more than the short duration and paraplegia patient and incomplete patient were highly elevated than tetraplegia and the complete patients (Table 5). This analysis demonstrated that sports activity has a powerful influencing capability those can alleviate the anxiety and depression scores in SCI patient.

Mean difference between before and after sports participation in the different scale

The distinction between different types of measurement scale is indicated in Figure 1. It also represented pre and post sports program on a different scale. State-trait anxiety-X2 presented prior and after mean differences 55.9 and 45.9, depression measurement scale also showed mean difference and it was 104.9 and 76.3 and Hospital Anxiety and Depression score for depression (HADS) were 13.1 and 10 HADS for Anxiety 13.7 and 10.3. The depression and anxiety level were more before attended sports program and the mean difference indicates that mean difference was after sports program.

DISCUSSION

The purpose of this study was to investigate whether sports activity is associated with the better psychological profile like as anxiety and depression in patients with SCI and to evaluate the effect of demographic factors on psychological benefits. But another study they did not find any association between socio-demographic factors [5].

The present study was done within 3 months according to Bangladesh context. Participant of the study

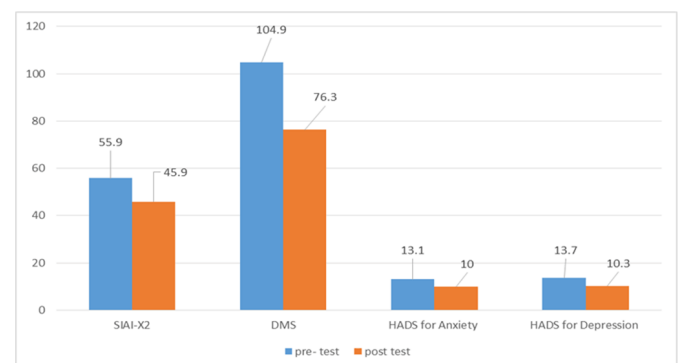


Figure 1: Mean difference between before and after sports participation in the different scale.

Table 2: State-Trait Anxiety Inventory- X2 (STAI-X2) pre-test, post-test and P value

		State-Trait Anxiety Inventory- X2 (STAI-X2)		
		Pre-test Mean ± SD	Post-test Mean ± SD	p-value
Overall		55.9 ± 4.5	45.9 ± 4.4	0.000
Marital Status	Married	55.7 ± 4.9	45.9 ± 3.4	0.000
	Unmarried	56.7 ± 3.4	46.0 ± 5.5	0.000
Family Member Number	5 or Less than 5	56.0 ± 3.74	47.4 ± 3.2	0.000
	6 to 7 Members	57.7 ± 4.7	46.0 ± 3.6	0.000
	8 or more than 8	54.6 ± 4.7	44.9 ± 4.8	0.000
Educational Status	No Education	58.2 ± 3.4	47.0 ± 3.9	0.000
	Primary Education	57.4 ± 2.1	47.9 ± 2.7	0.000
	Secondary Education	55.6 ± 5.1	44.6 ± 5.1	0.000
	Post-Secondary Education	52.4 ± 5.7	43.4 ± 5.0	0.008
Monthly Income	9000 and below	58.3 ± 2.7	48.3 ± 2.7	0.000
	9001- 18000 Taka	56.1 ± 3.8	45.4 ± 5.5	0.000
	18001 and Above	53.5 ± 6.2	44.5 ± 2.1	0.003
Earning Member	Only One	57.8 ± 2.5	48.2 ± 3.4	0.001
	Two or More	55.5 ± 4.8	45.4 ± 4.5	0.000
Duration of Injury	3 Months or Less	54.6 ± 3.6	44.2 ± 3.8	0.000
	More than 3 Months	56.7 ± 4.8	46.8 ± 4.4	0.000
Type of paralysis	Paraplegia	55.0 ± 4.4	44.9 ± 4.3	0.000
	Tetraplegia	60.0 ± 2.2	49.8 ± 2.0	0.000
Type of Patients	Complete SCI	56.9 ± 4.8	48.0 ± 3.3	0.000
	Incomplete SCI	54.9 ± 4.0	43.4 ± 4.1	0.000
Presents of Career	Yes	56.3 ± 6.5	47.8 ± 5.6	0.000
	No	55.8 ± 2.8	44.8 ± 3.1	0.000
Enjoy Sports of the Participants	Yes	55.6 ± 4.5	45.5 ± 4.4	0.000
	No	59.3 ± 2.5	49.7 ± .56	0.015
Can Play Independently	Yes	55.5 ± 4.2	45.3 ± 4.1	0.000
	No	57.1 ± 5.3	47.4 ± 4.9	0.000

Table 3: Depression Measurement Scale pre-test, post-test and P value

		Depression Measurement Scale		
		Pre-test Mean ± SD	Post-test Mean ± SD	p-value
Overall		104.9 ± 17.1	76.3 ± 19.4	0.000
Marital Status	Married	104.6 ± 15.9	77.8 ± 17.7	0.000
	Unmarried	105.8 ± 20.5	72.5 ± 23.9	0.000
Family Member Number	5 or Less than 5	93.6 ± 11.1	68.1 ± 14.5	0.001
	6 to 7 Members	112.7 ± 15.2	81.9 ± 19.6	0.001
	8 or more than 8	105.8 ± 18.6	77.0 ± 21.5	0.000

Table 3: (Continued)

		Pre-test Mean ± SD	Post-test Mean ± SD	p-value
Educational Status	No Education	106.0 ± 14.6	83.0 ± 13.8	0.026
	Primary Education	100.4 ± 13.8	69.6 ± 22.9	0.000
	Secondary Education	111.6 ± 16.6	75.1 ± 18.9	0.001
	Post-Secondary Education	102.7 ± 16.7	81.4 ± 19.0	0.000
Professions of the Participants	Manual Work	102.0 ± 17.1	74.4 ± 19.6	0.000
	Non-manual Work	106.2 ± 12.2	79.6 ± 15.9	0.001
	Unemployed	109.6 ± 25.7	76.6 ± 27.2	0.025
Monthly Income	9000 and below	107.4 ± 19.6	79.0 ± 20.1	0.002
	9001-18000 Taka	103.7 ± 18.9	74.5 ± 22.1	0.000
	18001 and Above	104.6 ± 12.0	76.9 ± 14.7	0.002
EarningMember	Only One	110.8 ± 20.1	82.3 ± 23.3	0.023
	Two or More	103.5 ± 16.4	74.8 ± 18.6	0.000
Duration of Injury	3 Months or Less	105.4 ± 13.3	79.0 ± 16.0	0.000
	More than 3 Months	104.6 ± 19.1	74.7 ± 21.2	0.000
Type of paralysis	Paraplegia	105.5 ± 17.1	75.0 ± 18.9	0.000
	Tetraplegia	102.5 ± 18.3	81.5 ± 22.2	0.005
Type of Patients	Complete SCI	107.3 ± 17.3	79.6 ± 20.9	0.000
	Incomplete SCI	102.3 ± 17.0	72.7 ± 17.6	0.000
Presents of Career	Yes	101.8 ± 18.1	80.7 ± 21.7	0.000
	No	106.8 ± 16.6	73.5 ± 17.8	0.000
Enjoy Sports of the Participants	Yes	106.4 ± 17.2	77.5 ± 19.5	0.000
	No	91.3 ± 7.5	64.7 ± 16.3	0.058
Can Play Independently	Yes	105.6 ± 17.8	73.5 ± 19.6	0.000
	No	103.2 ± 15.9	83.1 ± 18.2	0.000

Table 4: Hospital Anxiety and Depression Score (HADS) – Anxiety Score

		Pre-test mean ± SD	Post-test mean ± SD	p-value
Overall		13.1 ± 1.3	10.0 ± 1.7	0.000
Marital Status	Married	13.2 ± 1.1	10.1 ± 1.6	0.000
	Unmarried	12.8 ± 1.7	9.7 ± 1.8	0.000
Family Member Number	5 or Less than 5	12.9 ± 1.6	10.7 ± 1.6	0.000
	6 to 7 Members	13.5 ± 1.1	9.7 ± 1.7	0.000
	8 or more than 8	12.8 ± 1.2	9.7 ± 1.6	0.000
Educational Status	No Education	13.3 ± .5	9.8 ± .9	0.001
	Primary Education	12.8 ± 1.5	10.1 ± 2.2	0.000
	Secondary Education	13.2 ± 1.6	9.8 ± 1.4	0.000
	Post Secondary Education	13.0 ± 1.1	10.1 ± 1.7	0.003

Table 4: (Continued)

		Pre-test mean ± SD	Post-test mean ± SD	p-value
Monthly Income	9000 and below	13.7 ± 1.1	10.7 ± 1.4	0.000
	9001-18000 Taka	12.8 ± 1.2	9.7 ± 1.6	0.000
	18001 and Above	12.7 ± 1.4	9.7 ± 1.8	0.001
Earning Member	Only One	14.0 ± .8	11.0 ± 1.4	0.007
	Two or More	12.8 ± 1.3	9.7 ± 1.6	0.000
Duration of Injury	3 Months or Less	13.1 ± .87	10.3 ± 1.6	0.000
	More than 3 Months	13.0 ± 1.5	9.8 ± 1.6	0.000
Type of paralysis	Paraplegia	13.0 ± 1.3	9.9 ± 1.6	0.000
	Tetraplegia	13.0 ± 1.0	10.1 ± 2.0	0.005
Type of Patients	Complete SCI	13.1 ± 1.4	10.1 ± 1.9	0.000
	Incomplete SCI	13.0 ± 1.2	9.8 ± 1.3	0.000
Presents of Career	Yes	13.8 ± 1.0	10.5 ± 1.5	0.000
	No	13.0 ± 1.4	9.6 ± 1.7	0.000
Enjoy Sports of the Participants	Yes	13.1 ± 1.3	9.9 ± 1.5	0.000
	No	12.6 ± 1.5	10.3 ± 3.0	0.118
Can Play Independently	Yes	13.0 ± 1.4	9.8 ± 1.6	0.000
	No	13.1 ± .9	10.4 ± 1.7	0.000

Table 5: Hospital Anxiety and Depression Score (HADS) – Depression Score

		Pre-test mean ± SD	Post-test mean ± SD	p-value
Overall		13.7 ± 2.6	10.3 ± 1.8	0.000
Marital Status	Married	13.4 ± 2.7	10.3 ± 1.8	0.000
	Unmarried	14.4 ± 2.2	10.3 ± 1.9	0.000
Family Member Number	5 or Less than 5	12.3 ± 1.3	10.1 ± 1.2	0.002
	6 to 7 Members	14.4 ± 2.9	10.6 ± 1.8	0.000
	8 or more than 8	13.9 ± 2.7	10.2 ± 2.0	0.000
Educational Status	No Education	12.6 ± 1.9	9.3 ± .8	0.006
	Primary Education	14.0 ± 2.9	10.4 ± 2.5	0.000
	Secondary Education	15.0 ± 2.8	10.7 ± 1.3	0.001
	Post-Secondary Education	12.5 ± 1.6	10.5 ± 1.6	0.000
Monthly Income	9000 and below	14.7 ± 2.3	11.6 ± 2.2	0.000
	9001-18000 Taka	13.8 ± 2.7	10.3 ± 1.8	0.000
	18001 and Above	12.3 ± 2.0	10.0 ± 1.1	0.010
Earning Member	Only One	14.8 ± 2.3	11.5 ± 1.0	0.015
	Two or More	13.4 ± 2.6	10.0 ± 1.8	0.000
Duration of Injury	3 Months or Less	13.5 ± 2.2	10.5 ± 1.6	0.000
	More than 3 Months	13.7 ± 2.8	10.2 ± 1.9	0.000
Type of paralysis	Paraplegia	13.6 ± 2.6	10.3 ± 1.7	0.000
	Tetraplegia	14.0 ± 2.6	11.1 ± 2.1	0.002
Type of Patients	Complete SCI	13.7 ± 2.7	10.4 ± 2.1	0.000
	Incomplete SCI	13.6 ± 2.5	10.2 ± 1.3	0.000
Presents of Career	Yes	13.6 ± 2.3	10.4 ± 1.6	0.000
	No	13.6 ± 2.8	10.2 ± 1.9	0.000
Enjoy Sports of the Participants	Yes	13.8 ± 2.6	10.3 ± 1.8	0.000
	No	12.3 ± .5	10.0 ± 2.0	0.118
Can Play Independently	Yes	13.5 ± 2.5	10.2 ± 1.7	0.000
	No	14.0 ± 2.6	10.5 ± 1.9	0.000

was cooperative. Generally, context people don't work for anxiety and depression in Bangladesh. The study shows that sports activity made a difference between the scores of STAI-X2 and depression measurement scale of SCI patients. Initially, the state of anxiety and depression were moderate and after participating, sports depression level had a significant decrease but no change in the anxiety state. Previous research revealed significance variance between Self-Rating Depression Scale and STAI-X2[5].

Our research worked for diverse sports such as wheelchair basketball, hand volleyball, table tennis, ball throw. Mean age was 34.8 years and all participant were male, the female was few numbers that are why researcher has been excluded in influence data. The similar study revealed years and female participation in sports activity was very low, so they excluded that data from the analysis [8]. In this study, paraplegic patient was more than tetraplegic. Sports activity improve the psychological status especially reduction of depression and anxiety level. Another study showed mean age 42.7 years and they also worked for diverse sports also [5]. The sports can improve physical status as strength, coordination power, cardiovascular status, pulmonary function and that all can improve their psychological status and quality of life that helps to lessen the anxiety and depression [9].

Some data showing the better reduction of anxiety and depression between tetraplegia and paraplegic groups participating in sports activity. The recent study showed in psychological status, paraplegic patients improved rather than tetraplegic. But on the contrary, the study showed there is no relation between levels of injury with psychological status. Both groups were the positive impact on sports activity [14]. Sports participants are benefited physically, psychologically and socially from the sports activity [15].

However, the researcher found that influence of different external factors, such as age, educational level, marital status or occupational status, which is independent of neurological status, and participation in sports recreation might be associated with different psychological conditions. But for small sample size and short time duration, it may not be possible to generalize the study result of reducing in sports to reduce the anxiety and depression level of SCI patients on sports.

The determination of this quasi-experimental study had two main objectives: to examine sports activity is related to better psychological profiles in SCI patients and to have a relationship between demographic factors on psychological benefits. The researcher revealed there was the association between educational level, economic status, and anxiety and depression level. But another study showed there is no association between socio-demographic and psychological status [8].

From the overall discussion, we may comment that to reduce the anxiety and depression level sports have a greater impact and can play an effective role. The null hypothesis of this study was sports cannot reduce the

anxiety and depression level of spinal cord injury patients, but in this study, we vindicate that sports activity help to abate the anxiety and depression level of Spinal cord injury patients. So, the null hypothesis was rejected in this study.

Strength

It was the maiden study in the field of SCI to measure impacts of sports in a developing country in Bangladesh. Sports has not yet been integrated into SCI rehabilitation protocol widely in Bangladesh.

Limitation

The limitations were studied was confined to the hospital setting, there was no long-term follow up, no women were found for the study, the overall changes in quality of life has not been measured and wheelchair basketball is not a popular sport in Bangladesh. The study would be much incorporated if cricket could be included and the impacts of sports in the community could be revealed.

CONCLUSION

Spinal cord injury patients faced with the reality of disability. They experience anxiety and depression, and lost their confidence, as a result, their quality of life has been reduced. Anxiety and depression both are the prominent terminal psychiatric disorder, so it should be considered with greater priority. Though improvement was higher in paraplegic and incomplete spinal cord injury patients, changes have been noted in the patients with all level of injury. Early detection and proper management of this condition are very essential. Sports activity could provide desirable psychological status showing a particularly strong association with general level of anxiety and depression.

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Mahmudul Hasan Imran – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Sharmin Alam – Substantial contributions to conception and design, Acquisition of data, Drafting the article, Final approval of the version to be published

Kazi Imdadul Haque – Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

KM Amran Hossain – Substantial contributions to conception and design, Acquisition of data, Drafting the article, Final approval of the version to be published

Shamima Islam Nipa – Substantial contributions to conception and design, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Md. Forhad Hossain – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor of Submission

The corresponding author is the guarantor of submission.

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Consent Statement

Written informed consent was obtained from the patient for publication of this study.

Conflict of Interest

Authors declare no conflict of interest.

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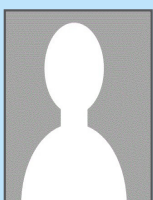
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