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Research Article

Prevalence and Impact of Psychiatric Co-Morbidity in Patients with Spinal Pathology in Basrah, Iraq

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Abstract:

Background and objective: to minimize complications by proper selection of patients for surgery and to evaluate what is the impact of psychiatric co-morbidity in patients admitted to a spinal surgical unit in Basrah, Iraq.

Patients and Methods: A multi-center cross-sectional prospective cohort study was conducted on 247 patients. In Basrah province. During admission complete history was taken in form of identity, complaint, past medical and surgical history, drug history, type of previous and the coming surgery and lastly special emphasis on the questioner to assess patient psychological status using the Patient Health Questioner. Somatic Anxiety Depressive Symptoms (PHQ.SADS)

After one week and one-month the same questions were addressed to the patient to check the general condition,and any complications or readmission.

Results: Out of the 247 patients: Eight patients refuse to be part of this study, thirty-one patients lost follow up, three patients excluded from the study due to exclusion criteria, five patients their surgery postponded because they were psychologically unstable and advised for psychiatrist consultation.

111 patients (55.5%) of the sample size were male patients.

A 90 (45%) patients were at age of 38-57 years, 111 (55.5%) of the sample were male 82 patients (41%) were of moderate degree using the PHQ.SADS. 62 patients (31%) were within the severe scale PHQ.SADS.132 patients (66%) complained from radiculopathy with or without backache,192 (96%) patients discharged safely postoperatively.

41(39.4%) patients were diagnosed with lumber canal stenosis belongs to the severe group.

Psychological break down occurs in 10 (5%) patients, 9 (90%) of those patients belong to severe grade category of PHQ.SADS.

Conclusion: There was a strong association between pre-operative psychological conditions and post-operative complications in form of repeated visit after surgery and persistence of pain and disability.

1. Introduction

1.1 background

The care of surgical patients should not be limited to the details of the pathological process and the surgical technique and even when spinal surgery seems to be fruitful, it does not necessarily improve patients functioning or satisfaction with the care. [1, 2]

There are a number of psychological, social and behavioral factors known to spoil the outcome of surgery like emotional stress which affects both the inflammatory response and the immune system, both can negatively influence the surgical outcome. [3]

Depression increases the risk of non-adherence to physical therapy and refusal to take medications as prescribed and lead to dissatisfaction with the outcome of the surgery no matter how perfect was the surgery. [4, 5]

Deep sleep encourages the release of growth hormones, which enhance wound healing, emotional stress can delay recovery by reducing deep sleep, and so increases the risk of chronic pain. [6]

There is a real need for psychiatric evaluation before performing surgery. Pre-operative mental health screening should be a routine part of the evaluation of patients in whom surgery is being considered. [1]

Depending on the psychiatric evaluation, the surgeon can decide whether the patient is a good candidate for surgery or not. Many mental health issues can create problems in the post-operative period that include the patient with anxiety and depression, those with poor self-image or with body dysmorphism.

The following five patient-related factors were identified to be

associated with the development of persistent postoperative pain like: anxiety, depression, pain catastrophizing, pain sensitivity, and preoperative opioid consumption. [7]

Psychological evaluations were used to help selecting appropriate patients for surgery versus conservative treatment. This approach reduced the duration of disability and was associated with an estimated $859 million savings in one year in USA. [8]

The physician rate of sensitivity when detecting high-level distress was 28.7% while a largeer percentage using the questioner (64%).This support the importance of routinely using the questioner.

Both orthopedic literature and broader chronic disease literature underscore the importance of addressing emotional wellbeing before performing orthopedic procedures. [9]

We feel it's a mandatory to screen all patients with spinal pathology prior to surgery, hopefully our study can prevent the annoying outcome after operating on patient who is psychologically unwell which may lead to poor postoperative outcome with persistent pain and other complaints. Our aim is to provide insight into the relationship between preoperative psychological status and a variety of outcomes following spine surgery.

Study design

This cross-sectional prospective cohort study was done for patients prepared for spinal surgery in a period from February 2020 to February 2023.

Target Population

Adult patients (age 18 years and above) presenting to a tertiary spine center in Basrah.

Inclusion criteria: Adult patients who can give informed consent.

Sampling Method/Recruitment Process:

The identified patients were invited to give written confirmation to be part of the study and a copy of the concent was kept in the clinical note and one in the study file. Evaluation took place within the first 24 hours of the patients' admission. Each patient invited was given an internal study number. Only the local investigators were able to match this with the personal details of the patients.

The age and gender were also recorded.

Study Procedures

The front sheet contains the participant number, details of patient's identity (hospital number, name, date of birth).

- Patients were given written and verbal clarification about the study.
- Details about the patient's timing of surgery, comorbidities, frailty, alcohol consumption, smoking, recreational drug use as well as the number of medications, literacy, marital status and education were recorded.

The diagnoses on discharge, date of discharge, the outcome as well as data regarding readmission (7 and 30 days) post-discharge, death were also recorded after discharge on the questioner, one death was also recorded after transfer to the intensive care unit.

2.8 Statistical Analysis

The data were checked and fed into computer system. The statistical analysis was made by using SPSS (statistical package for social sciences) version 25

We depend on PHQ.SADS 10 in this study [20].

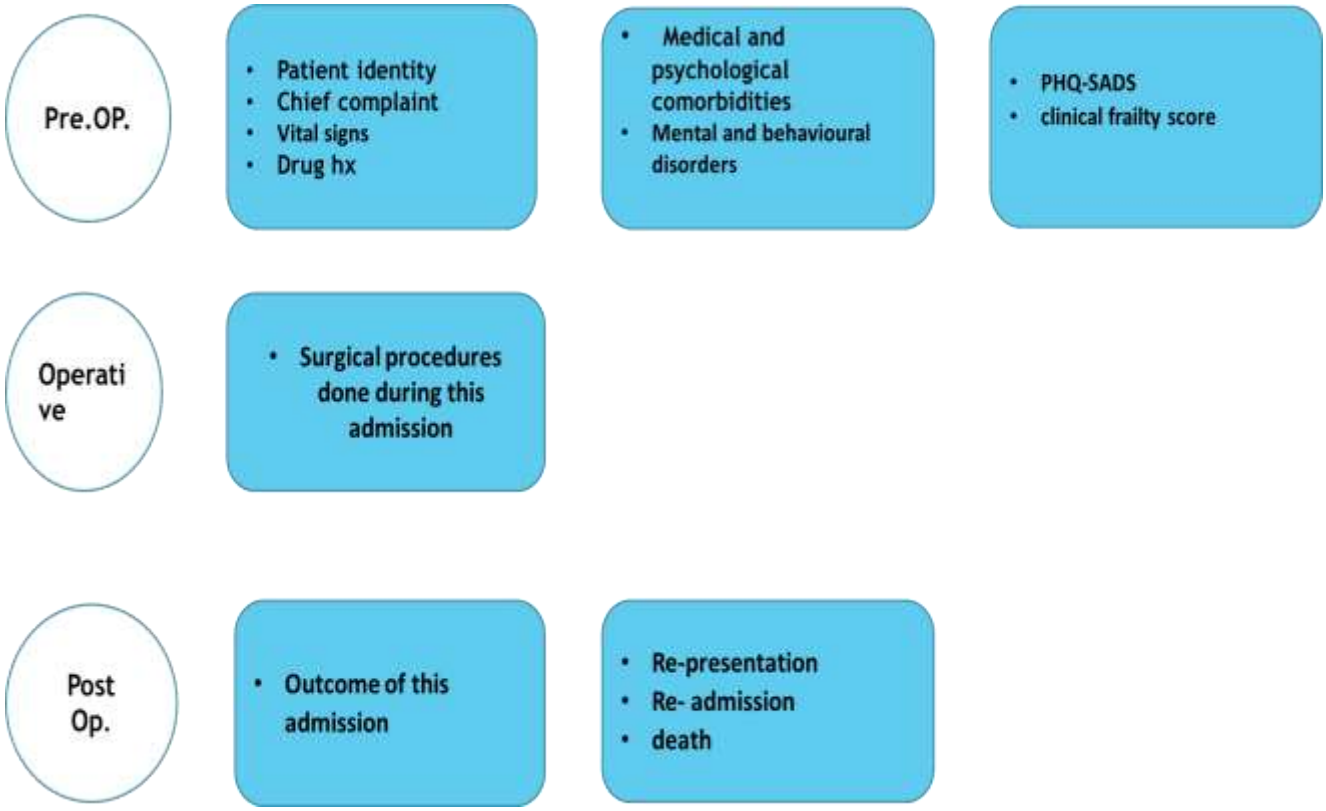

Figure1: simplified questioner protocol.

Table 1: Socio-Demographic Distribution

Characteristic		Frequency	Percent
Age	18-37 yr.	45	22.5
	38-57 years	90	45.0
	58 years& above	65	32.5
Gender	Male	111	55.5
	Female	89	44.5
Education	Primary school	92	46.0
	Intermediate school	24	12.0
	Secondary school	43	21.5
	Vocational or technical training	20	10.0
	University	21	10.5
Nicotine use	Current	37	18.5
	Ex	25	12.5
	Never	138	69.0
Alcohol use	Current	1	0.5
	Ex	9	4.5
	Never	190	95.0
Drug abuse	Current	34	17.0
	Ex	18	9.0
	Never	148	74.0

The table above showed the demographic details of the studied patients.

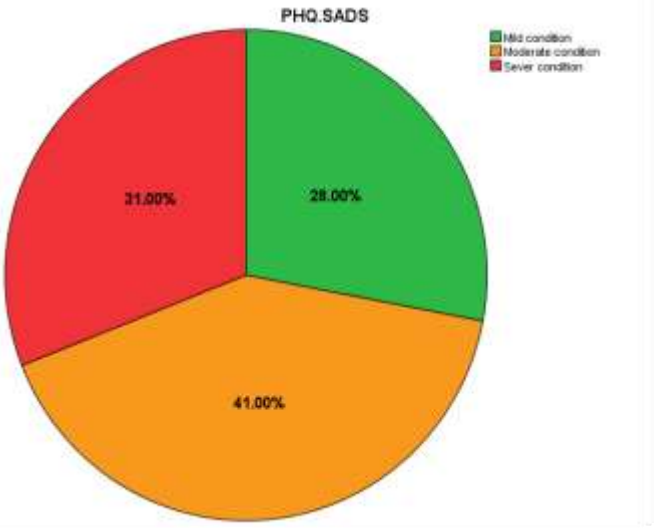

Figure2: Pie chart showed the details of the psychological status using PHQ.SADS.

Table (2): Medical and Psychological Comorbidity

Characteristic		Frequency	Percent
Medical Comorbidity	Normal	100	50.0
	1 disease	41	20.5
	2 diseases	42	21.0
	More than 2 diseases	17	8.5
Psychological Comorbidity	normal	128	64.0
	1 disease	20	10.0
	2 diseases	28	14.0
	more than 2	24	12.0

Table 2 shows the medical and psychological comorbidity.

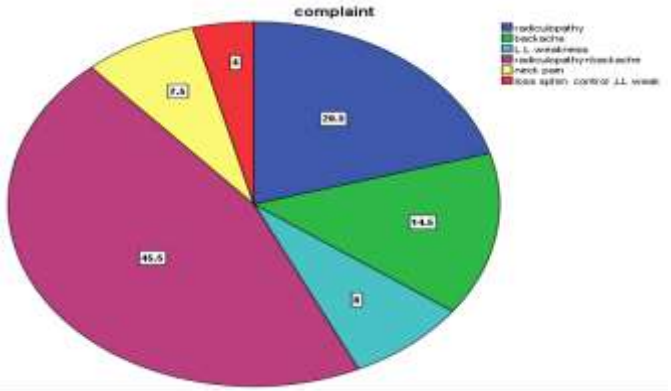

Figure 3: pie chart showing Distribution of clinical presentation of patient's complaint

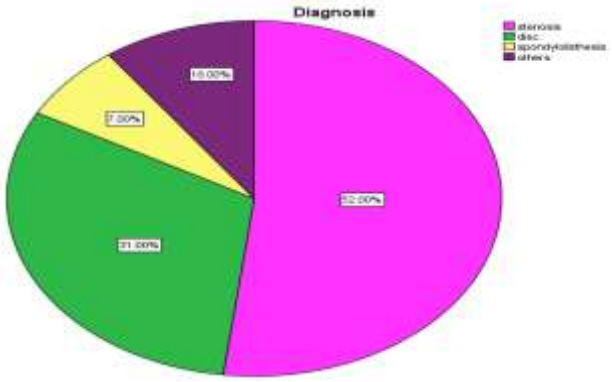

Figure (4): Pie chart showed clinical presentation of the patients' diagnosis

Table (3): Timing of surgery table

Characteristic	Frequency	Percent
Elective	180	90.0
Emergency	20	10.0

52 % (104 patients) diagnosed with lumber canal stenosis, 62 patients (31 %). lumber disc prolapses

Table (4): the outcome of the patients in our study.

Characteristic		Frequency	Percent
Outcome	Discharge	192	96.0
	Self-discharge	6	3
	Transfer to other hospital	2	1.0
Psychological breakdown	yes	10	5.0
	no	190	95.0
Follow-up	ED within7 days	9	4.5
	ED 7 to 30 days	15	7.5
	Readmission 7 to 30 days	8	4.0
	Normal	168	84.0
Hospital stays	1-2 days	114	57.0
	3-4 days	66	33.0
	5 days and more	20	10.0

E.D. emergency department visit

Table (5): Association between diagnosis and age of the patients

			Age			Total	p- value
			18-37 yr.	38-57 yr.	58 yr. and above		
Diagnosis	Stenosis	Count	9	44	51	104	0.0001
		%	20.0%	48.9%	78.5%	52 %	
	Disc	Count	33	27	2	62	
		%	73.3%	30.0%	3.1%	31%	
	Spondylolisthesis	Count	1	5	8	14	
		%	2.2%	5.6%	12.3%	7%	
	Others (cervical injury,abscess drainage, trauma.etc.)	Count	2	14	4	20	
		%	4.4%	15.6%	6.2%	10 %	
Total		Count	45	90	65	200	
		%	100%	100%	100%	100%	

- There was significant statistical association in which:
- 33 patients (73.3%) within 18-37 year of age were diagnosed with disc prolapse
- 27 patients (30%) within age group of 38-57 years with same diagnosis.
- 51 patients (78.5 %) aged 58 years and more diagnosed with stenosis.
- **3.8 Association between PHQ.SADS and the age of patients**
- patients aged 18-37 years 22 of patients (48.9%) showed moderate PHQ.SADS, compared to 32 patients (35.6%) and 28 of patient (43.1%) aged 38-57 years and 58 years and older respectively showed moderate condition but this was not statistically significant association.
- **3.9 Association between PHQ.SADS, Diagnosis, and patients' fate**
- 41 patients (39.4%) diagnosed with stenosis had severe PHQ.SADS compared to 15 patients 24.2% and 3 patients (21.4%) with disc prolapse and Spondylolisthesis respectively had severe condition PHQ.SADS, but there was no statistically significant association.
- The questioner showed mild score 16 patients (80%) of those submitted for emergent surgery, while 79 patients (43.9%) of patients with elective surgery showed moderate PHQ.SADS and this was statistically significant(pvalue) association. There was statistically significant association between PHQ.SADS severity and outcome as showed in the table and highly significant statistical association between PHQ.SADS and psychological breakdown, follow up and hospital stay.

Table (6): Association between PHQ.SADS, diagnosis and patients' outcome

			PHQ.SADS			Total	P - value
			Mild condition	Moderate condition	Sever condition		
Diagnosis *	Lumber canal Stenosis	Count	26	37	41	104	0.093
		%	25.0%	35.6%	39.4%	100 %	
	Lumber Disc	Count	20	27	15	62	
		%	32.3%	43.5%	24.2%	100%	
	Spondylolisthesis	Count	2	9	3	14	
		%	14.3%	64.3%	21.4%	100%	
	Others	Count	8	9	3	20	
		%	40.0%	45.0%	15.0%	100%	
Surgery*	**Discectomy**	Count	3	2	0	5	0.030
		%	60.0%	40.0%	0.0%	100%	
	Abscess drainage	Count	0	1	0	1	
		%	0.0%	100.0%	0.0%	100%	
	Laminectomy	Count	26	27	32	85	
		%	30.6%	31.8%	37.6%	100%	
	laminotomy	Count	17	28	14	59	
		%	28.8%	47.5%	23.7%	100.0%	
	Spinal fusion	Count	0	0	3	3	
		%	0.0%	0.0%	100.0%	100%	
	Spinal fixation	Count	0	4	0	4	
		%	0.0%	100.0%	0.0%	100%	
	Decompression and fussion	Count	10	20	13	43	
		%	23.3%	46.5%	30.2%	100%	
Timing of surgery*	**Elective**	Count	40	79	61	180	0.03
		%	22.2%	43.9%	33.9%	100%	
	Emergency	Count	16	3	1	20	
		%	80%	15%	5%	100%	
Outcome**	**Discharge**	Count	55	81	56	192	0.005
		%	98.2%	98.8%	90.3%	96%	
	Self-discharge	Count	0	0	6	6	
		%	0.0%	0.0%	8.6%	3%	
	Transfer to other hospital	Count	1	1	0	2	
		%	1.8%	1.2%	0.0%	1.0%	

Discussion

Pre-surgical psychological screening was used as a routine screen in the literature to lower failure rate after surgery.

Overall, the studies reviewed provides insight into the relationship between preoperative depression and a variety of outcomes, following spine surgery. Given that depression is a potentially modifiable risk factor for adverse outcomes, future

work might identify ways to mitigate the impact of depression and to improve outcomes for patients undergoing lumbar fusion. In assessing post fusion outcomes [1], [10],[11].

The preoperative assessment of depression should be included and that the disorder should be considered as a potential impact comorbid condition. [12].

The outcome of surgery may help improve patient selection and possible targeted intervention, and the amount and need of narcotics to be used post operatively [12, 2].

The psychological risk factors in adult patients scheduled for spine surgery include depression, anxiety, anger, fear-avoidance of pain and injury, stress, recreational drug use, other pre-existing psychiatric comorbidities, and history of abuse. [13]

In our study 144 patients (72%) were of moderate and severe degree of PHQ.SADS and this was more than Saunders et al study who examined a larger number (n = 801) of American adults with traumatic spinal cord injury the clinically significant symptoms of depression were in 41.4% of them. [14].

This result is expected because of the civil psychological

disturbance in our locality due to poverty and lack of jobs in addition to political unsteadiness and wars.

37 female patients (41.6%) were belong to the severe group, while 38 male patients (34.2%) were belong to the same group. A striking point was found that depression was found in middle age group more than elder age group about 32 patients (35.6%) showed severe scores in PHQ.SAD compared to older group of patients which are 17 patients (26.2%). This is probably related to socioeconomic status in our locality.

Our results differ from Sher-Wei Lim et al study which showed increasing proportion of depression with old age group. [15]

In our study 132 patients (66%) complained from radiculopathy with or without backache followed by backache alone with 28 patients (14%) as chief complaint this agrees with result of Scott Bialy study their patients had a primary complaint of mild lower back pain with or without leg pain and average symptom duration (41 days), prior history of lower back pain (70.4%), and history of more than 3 episodes (59%). [16]

180 patients (90%) were submitted to elective surgery and 10 % to emergency surgery group, the grade of psychological distress was low in the emergent surgery group, 16 patients (80%) while the score in elective surgery was 40 patient (22.2%) which is much lower percentage, the remaining of them were belong to the moderate and severe grade on the questioner 140 patient (77.8%).

This was statistically significant association, this may be attributed less suffering from chronic pain that may affect emotional, social and psychological wellbeing.

Up to our knowledge we didn't find a study correlating elective and emergent surgery.

In Regard to the association between Diagnosis and score of PHQ.SADS, we found 41 patients 39.4% diagnosed with lumber canal stenosis had severe score PHQ.SADS compared to 24.2% in disc prolapse and 21.4% of patients with Spondylolisthesis, we couldn't find statistically significant association this was in agreement with Avni Khandelwal, et al study [17]

In Our study there was statistically significant association between the grade on the questioner and outcome of surgery and highly statistically significant association between PHQ.SADS and psychological breakdown and hospital stay

14 patient (22%) who belong to the severe grade remains in hospital post operatively 5 days or more, while only 1 patient (1.8%) who belongs to mild group remain in hospital for the same duration., Greater fear or distress prior to surgery is associated with a slower recovery and more postoperative complication.

Although anxiety presumably interferes with recuperation through both behavioral and physiological mechanisms, the pathways have been unclear, as showed in recent work in psychoneuroimmunology (PNI) [3] the study demonstrated that stress delays wound healing in addition, the same article illustrated the adverse effects of pain on endocrine and immune function. A bio behavioral model described that based on these and other data; it suggests a number of routes through which psychological and behavioral responses can influence surgery and post-surgical outcome [3].

Also, well documented that patients with major depressive disorder (MDD) showed increased pain sensitivity [19].

Patients who suffered from lumber canal stenosis 41patients (39.4%) belong to the sever group. this may be attributed to the chronic suffering from pain as mentioned by (The scar hypothesis) which may increase the likelihood for the development of depression [18].

Study Limitations

- The Stigma of mental health in our locality makes some patients unwilling to share in our study.

Conclusions

- Psychiatric co-morbidity in patients with spinal pathology should be screened in addition to other medical comorbidity before planning for the type of management.
- Duration of hospitalization increased as the score in the level of psychological depression increase.
- The rate of psychological breakdown and repeated visits after surgery increased when the grading was severe
- Spinal stenosis was associated with sever grade in the questioner, This May be attributed to chronic suffering from pain.
- Poor adherence to surgeon instructions were associated with sever grade of psychological condition good example is seen in self-discharge patients.
- Emergent surgery was associated with mild grade of psychological upset.

Recommendation

1. We recommend the use of this questioner in all spinal centers all over the globe as a routine in preoperative psychological evaluation.
2. Another similar study to be applied in spine unit all over Iraq.

References

1. Block, Andrew R., et al. "The use of presurgical psychological screening to predict the outcome of spine surgery." The Spine Journal 1.4 (2001): 274-282.
2. LaCaille RA, DeBerard MS, Masters KS, et al. Presurgical biopsychosocial factors predict multidimensional patient: outcomes of interbody cage lumbar fusion. The Spine Journal. 2005 Jan 1;5(1):71-8.
3. Kiecolt-Glaser JK, Page GG, Marucha PT, et al. Psychological influences on surgical recovery: perspectives from psychoneuroimmunology. American Psychologist. 1998 Nov;53(11):1209.
4. Gehi A, Haas D, Pipkin S, et al. Depression and medication adherence in outpatients with coronary heart disease: findings from the Heart and Soul Study. Archives of internal medicine. 2005 Nov 28;165(21):2508-13.
5. Adogwa O, Parker SL, Shau DN, et al. Preoperative Zung depression scale predicts patient satisfaction independent of the extent of improvement after revision lumbar surgery. The Spine Journal. 2013 May 1;13(5):501-6.

6. Okura K, Lavigne GJ, Huynh N, et al. Comparison of sleep variables between chronic widespread musculoskeletal pain, insomnia, periodic leg movements syndrome and control subjects in a clinical sleep medicine practice. Sleep medicine. 2008 May 1;9(4):352-61.
7. Daubs MD, Patel AA.et al Clinical impression versus standardized questionnaire: the spinal surgeon's ability to assess psychological distress. JBJS. 2010 Dec 15;92(18):2878-83.
8. Bruns D, Mueller K, Warren PA. Biopsychosocial law, health care reform, and the control of medical inflation in Colorado. Rehabilitation psychology. 2012 May;57(2):81.
9. Ayers, D. C., Franklin, P. D., & Ring, D. C. The role of emotional health in functional outcomes after orthopaedic surgery: extending the biopsychosocial model to orthopaedics: AOA critical issues. *The Journal of bone and joint surgery.* (2013). *American volume*, *95*(21).
10. YOUNG, Arthur K., et al. Assessment of presurgical psychological screening in patients undergoing spine surgery: use and clinical impact. *Journal of spinal disorders & techniques*, 2014, 27.2: 76.
11. EPKER, Jake; BLOCK, Andrew R. Psychological screening before spine surgery: avoiding failed surgery syndrome. Psychological Injury and Law, 2014, 7.4: 317-324.
12. MANSON, Neil A., et al. Understanding Anxiety and Depression when Performing Spine Surgery: 120. Preoperative psychological factors significantly add to the predictability of chronic narcotic use: a two-year prospective study. *The Spine Journal*, 2018, 18.8: S59.
13. Volpe K Della. Pre-Surgical Psychological Evaluation Before Spine Surgery. https://www.spineuniverse.com/professional/news/which-patients-undergo-pre-surgical-psychological-evaluation-spine-surgery (accessed 24 May 2020).
14. Saunders LL, Krause JS, Focht KL. A longitudinal study of depression in survivors of spinal cord injury. *Spinal Cord*. 2012;50:72–7. 10.1038/sc.2011.83
15. Lim SW, Shiue YL, Ho CH,.et al.Anxiety and Depression in Patients with Traumatic Spinal Cord Injury: A Nationwide Population-Based Cohort Study. PLoS One. 2017 Jan 12;12(1).
16. Biely, S., Smith, S. S., & Silfies, S. P. Clinical instability of the lumbar spine: diagnosis and intervention. *Orthopaedic Practice*, (2006). *18*(3).
17. Avni Khandelwal , Leigh Anne Shafer, Karen Ethans. Does severity of spinal cord injury predict likelihood of suffering chronically from severe depression and anxiety? Spinal Cord Ser Cases.2022 Jun 1;8(1):58.
18. Fishbain DA, Cutler R, Rosomoff HL,et al. Chronic pain-associated depression: antecedent or consequence of chronic pain? A review. The Clinical journal of pain. 1997 Jun 1;13(2):116-37.
19. Hermesdorf M, Berger K, Baune BT, et al. Pain sensitivity in patients with major depression: differential effect of pain sensitivity measures, somatic cofactors, and disease characteristics. The Journal of Pain. 2016 May 1;17(5):606-16.