

# An Analysis of Disability and Quality of Life in Patients of Failed Back Surgery Syndrome (FBSS) – A Cross-sectional Study

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## ABSTRACT

**Introduction:** Failed back surgery syndrome (FBSS) represents a clinical condition of patients that undergo one or more surgical procedures for lumbosacral disease and present unsatisfactory long-term relief of symptoms, with persistent or recurrent low back pain. It has been observed that patients with FBSS may had chronic longstanding back pain, with or without referred or radicular symptoms and may had one or more surgical interventions that have failed to control the chronic pain. Present study was planned to evaluate disability, depression and quality of life in patients of FBSS with persistent chronic pain (more than six months by definition of chronic pain) in the lumbar region.

**Material and Methods:** About 40 consecutive FBSS patients both sexes with radicular pain syndromes, associated with or without nerve root compression and on conservative therapy for at least six months were recruited. Pain Intensity was recorded by Pain Scales viz. Present Pain Intensity McGill (PPI) and Visual Analog Scale (VAS). Disability was determined by Oswestry Disability Index (ODI) & Roland-Morris Disability Questionnaire. Quality of Life Scale of American Chronic Pain Association was used to assess QoL and level of depression was assessed by using Patient Health Questionnaire (PHQ-9) Patient Depression Questionnaire.

**Results:** Epidural fibrosis, recurrence of disc herniation, foraminal stenosis, central stenosis was 12 (30%), 7 (17.5%), 7 (17.5%), and 6 (15%) respectively. Scores of ODI was graded as minimal (0–20%), moderate (21–40%), severe (41–60%), crippled (61–80%), and bedridden (81–100%). ODI shows majority patients with FBSS were with severe disability 21 (52.5%) followed by moderate disability and crippled cases in 8 (20%) and 9 (22.5%) respectively.

**Conclusion:** Chronic back pain is a serious public health issue, associated with poor quality of life and disability.

**Keywords:** Failed Back Surgery Syndrome, Low Back Pain (LBP), Chronic Back Pain, Disability, Quality Of Life, Depression

## INTRODUCTION

Low back pain (LBP) is a highly prevalent condition. It can have a tremendous social, financial, and psychological impact on a patient's life. It is a worldwide problem. It was estimated 9.4% as global incidence and creating more disability than any other condition in the World.<sup>1</sup> Prevalence of LBP increases with age. There is an increasing rate of surgeries to treat back pain in accordance with an aging population demography.<sup>2</sup>

Failed Back Surgery Syndrome (or FBSS) refers to the patients with persistent or new pain after spinal surgery for back. This chronic longstanding back pain, with or without referred or radicular symptoms and may had one or more surgical interventions that have failed to control the chronic pain. There are different types of spine surgery may be done to relieve the patients from chronic pain. They are like removing bone (laminectomy or foraminotomy) or disc material (discectomy) or a fusion of the spinal segment or segments (instrumented or bony fusion, sometimes referred to as a PLIF or posterior lumbar interbody fusion or as an ALIF or anterior lumbar interbody fusion).<sup>3,4</sup>

The major aetiologies of FBSS include inappropriate patient selection/diagnosis, poor operative technique, iatrogenic instability, and surgical complications. There are many different aetiological factors that may cause or contribute to FBSS and in every case an exact evaluation of the underlying causes is essential.<sup>5</sup> Psychological evaluation is very important to assess for these risk factors. This may play a key role in recognizing the predictive value of a patient's success after spinal surgery. Studies have demonstrated that depression is one of the strongest prognostic indicators of a negative outcome after spinal surgery. Depressed patients

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generally feel more pain and weakness. Their return to normal work reported significantly lower rates compared with their non-depressed counterparts.<sup>6, 7</sup> That is why depression, anxiety, and other psychological and social factors may be used to assess whether the patient is a good candidate for spinal surgery. The United States Preventative Service Task Force recommends a presurgical psychological screening. However, majority of spinal surgeons may not use such an evaluation before surgery.<sup>8</sup> It has been advocated that widespread use of preoperative psychological evaluations may play an important role in the prevention of FBSS.

FBSS is a diagnosis or condition. But this is an imprecise term encompassing a heterogeneous group of disorders that have in common pain symptoms after lumbar surgery. The current literature primarily diagnoses for the various aetiologies of FBSS from a surgical perspective. It is a syndrome consisting of a myriad of surgical and nonsurgical aetiologies, in which approximately one half of FBSS patients have a surgical aetiology. Studies have reported that 95% of patients may have a specific diagnosis like poor patient selection (abnormal psychometrics, chronic pain behaviour, unreachable expectations, incorrect diagnosis), wrong surgical procedure (wrong level, missed spinal stenosis, progressive disease, recurrent disk herniation or spinal stenosis, transition syndrome), failure to achieve goal of surgery (pseudo-arthrosis, incomplete decompression, incomplete correction of deformity) and poor technique (battered root syndrome, iatrogenic instability, residual deformity).<sup>9, 10, 11</sup>

With regards to treatment options, clinical responses to FBSS are varied, scientifically unproven and often costly.<sup>12</sup> Pain clinics in the UK seem to be in step with practice in Europe and North America, whereby a range of therapeutic options are pursued in the hope of addressing the range of presenting symptoms. This interdisciplinary approach to conventional medical management, including physical therapy and pharmacotherapy, alongside possible psychological/behavioural interventions, is necessary given that sufferers of FBSS are difficult to place within a clinical speciality.<sup>13</sup> Present study was planned to evaluate disability, depression and quality of life in patients of FBSS with persistent chronic pain (more than six months by definition of chronic pain) in the lumbar region.

## MATERIAL AND METHODS

A Nonrandomized, cross-sectional study was conducted at Dedicated government and private pain clinics, Kolkata, India. About 40 consecutive FBSS patients both sexes with radicular pain syndromes, associated with or without nerve root compression and on conservative therapy for at least six months were recruited. Study subjects were enrolled after taking permission from Institutional Ethics Committee [Letter No. CREC-STM/20/2013 dated 9/2/2013]. After screening through the selection criteria, written informed consent was obtained from study participants. Patients were examined clinically. Pain Intensity was recorded by Pain Scales viz. Present Pain Intensity McGill (PPI) and

Visual Analog Scale (VAS). The McGill Pain Questionnaire (MPQ) assesses three categories of word descriptors of pain qualities (sensory, affective, and evaluative) and includes a body diagram for patients to identify the area of their pain.<sup>14</sup> The VAS pain rating scale uses a 10-cm-long horizontal line, anchored by the verbal descriptors —No pain and —Worst pain imaginable, on which patients make a mark to indicate what they feel best represents their perception of the intensity of their current pain. The pain VAS is a single-item scale. The pain VAS is self-completed by the respondent. Scores are recorded by making a handwritten mark on a 10-cm line that represents a continuum between “no pain” and “worst pain. A higher score indicates greater pain intensity. The cut points on the pain VAS have been recommended: no pain (0–4 mm), mild pain (5–44 mm), moderate pain (45–74 mm), and severe pain (75–100 mm). The VAS takes 1 minute to complete. The pain VAS requires little training to administer and score and has been found to be acceptable to patients.<sup>15</sup> The pain was classified as neuropathic or non-neuropathic based on the Pain Detect Questionnaire.<sup>16</sup> It is a new screening questionnaire to identify neuropathic components in patients with back pain. A neuropathic pain component is likely (> 90%) if scoring result is positive and unlikely (< 15%) if it is negative.<sup>16</sup>

Disability was determined by Oswestry Disability Index (ODI)<sup>17</sup> & Roland-Morris Disability Questionnaire<sup>18</sup>. Quality of Life Scale of American Chronic Pain Association<sup>19</sup> was used to assess QoL and level of depression was assessed by using Patient Health Questionnaire (PHQ-9) Patient Depression Questionnaire<sup>20</sup>. The American Chronic Pain Association Quality of Life Scale looks at ability to function, rather than at pain alone. This questionnaire guides us to evaluate and communicate the impact of pain on the basic activities of daily life of chronic pain patients. The scale is meant to help individual's measure activity levels. Information gathered by above scale can provide a basis for more effective treatment and help to measure progress over time.<sup>19</sup>

The Oswestry Disability Index (also known as the Oswestry Low Back Pain Disability Questionnaire) is an extremely important tool that researchers and disability evaluators use to measure a patient's permanent functional disability. The test is considered the ‘gold standard’ of low back functional outcome tools.<sup>17</sup> Interpretation of scores are divided into 0% to 20% (minimal disability), 21%-40% (moderate disability), 41%-60% (severe disability), 61%-80% (crippled) and 81%-100% (bed-bound).<sup>17</sup>

The Roland Morris Disability Questionnaire (RMQ) is a 24-item patient-reported outcome measure that inquires about pain-related disability resulting from LBP. Items in the RMQ questionnaire are scored 0 if left blank or 1 if endorsed. There is a total RMQ score ranging from 0 to 24. The higher scores represent higher levels of pain-related disability.<sup>18</sup>

The Patient Health Questionnaire (PHQ) is a self-administered version of the PRIME-MD diagnostic instrument for common mental disorders. The PHQ-9 is the depression module. The PHQ-9 is the 9-item depression module from the full PHQ. It

scores each of the 9 DSM-IV criteria as "0" (not at all) to "3" (nearly every day). According to PHQ-9, major depression is diagnosed if 5 or more of the 9 depressive symptom criteria have been present at least "more than half the days" in the past 2 weeks, and 1 of the symptoms is depressed mood or anhedonia.<sup>20</sup>

**RESULTS**

About 40 consecutive FBSS patients both sexes with radicular pain syndromes, associated with or without nerve root compression and on conservative therapy for at least six months were recruited. Male and female ratio among participants was 35/5 (7:1). The mean age was 43.98 ± 10.74 yrs who developed FBSS [Table 1].

About 9 (22.5%) cases of FBSS there was history of trauma or injury. The types of operation undergone by patients' were laminectomy, endoscopic discectomy, fenestration & discectomy and decompression & screw fixation and their percentages were 16 (40%), 10 (25%), 6 (15%) and 3 (7.5%) respectively [Table 1].

There were different reasons for persistent pain in FBSS patients was noted. Epidural fibrosis, recurrence of disc herniation, foraminal stenosis, central stenosis was 12 (30%), 7 (17.5%), 7 (17.5%), and 6 (15%) respectively [Table 2]. In few cases it was because of 2 (5%) operation at the wrong level and 5 (12.5%) intraoperative trauma to nerve root(s).

The mean VAS score was 5.978 ± 0.2090 among study participants. The mean (McGill PPI) was 2.565 ± 0.1514 [Table 3]. It was observed that majority of the FBSS patients' complaints of discomforting, distressing and horrible by 16 (40%), 13 (12.5%) and 6 (15%) respectively.

The present FBSS series 18 (45%) were having neuropathic components as per pain DETECT screening questionnaire [Table 4]. About 17 (42.5%) result was ambiguous; however a neuropathic pain component can be present.

According to Roland disability questionnaire, most frequent problems experienced or behaviours adopted as a result of

Males	35 (87.5%)
Females	05 (12.5%)
Age	43.98 ± 10.74 yrs
Duration of problem since operation	3.28 ± 1.92 yrs
Smoking	14 (35%)
Previous history of trauma	9 (22.5%)
Types of Operation Undergone	
Laminectomy	16 (40%)
Laminectomy, Discectomy & Rod fixation	5 (12.5%)
Endoscopic Discectomy	10 (25%)
Fenestration & Discectomy	6 (15%)
Decompression & Screw Fixation	3 (7.5%)

**Table-1:** Demographic characteristics of patients' (n=40)

Recurrence of disc herniation	7 (17.5%)
Epidural fibrosis/scarring at site of spinal surgery	12 (30%)
Foraminal Stenosis	7 (17.5%)
Central Stenosis	6 (15%)
Intraoperative trauma to nerve root(s)	5 (12.5%)
Pre existing nerve damage	1 (2.5%)
Operation at the wrong level	2 (5%)

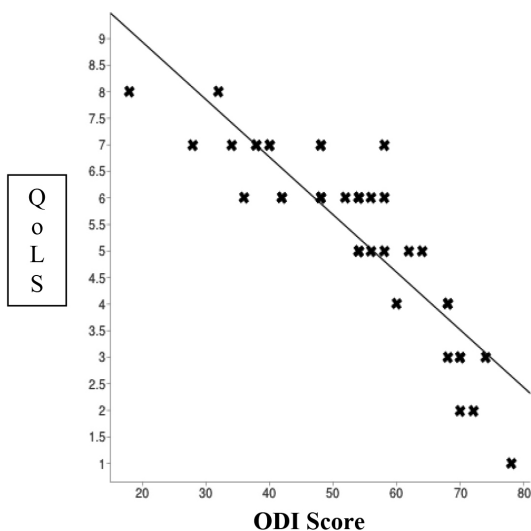
**Table-2:** Reasons for persistent pain in FBSS patients

McGill Pain Intensity Subscale (PPI)		
Scale Feature	Frequency	N (%) / Mean ± SD
0	No pain	0
1	Mild	5 (12.5%)
2	Discomforting	16 (40%)
3	Distressing	13 (12.5%)
4	Horrible	6 (15%)
5	Excruciating	0
(McGill PPI)	-	2.565 ± 0.1514
VAS Score	-	5.978 ± 0.2090

**Table-3:** Pain Intensity as Measured by Various Pain Scales

Unlikely	5 (12.5%)
Can be present	17(42.5%)
Likely	18 (45%)

**Table-4:** Neuropathic pain component (according to Pain Detect Questionnaire)



**Figure-1:** A strong negative relationship between the Quality of Life Scale & Oswestry Disability Index Score (Correlation coefficient (r): -0.877)

Change position frequently to try and get back comfortable	30 (75%)
Sleep less well because of back	24 (60%)
Try not to bend or kneel	22 (55%)
I walk more slowly than usual because of the pain in my back	19 (47.5%)
Back is painful almost all the time	15 (37.5%)
More irritable and bad tempered than usual	12 (30%)
Only stand for short periods	12 (30%)
Back is painful almost all the time	15 (37.5%)
More irritable and bad tempered than usual	12 (30%)
Only stand for short periods	12 (30%)

**Table-5:** Roland disability questionnaire: most frequent problems experienced or behaviours adopted as a result of low back pain in FBSS N= 40 (%)

	Score	(N=40) %
Non functioning - Stay in bed all day	0	0
Stay in bed at least half the day	1	0
Get out of bed but don't get dressed Stay at home all day	2	2 (5%)
Get dressed in the morning Minimal activities at home	3	5 (12.5%)
Do simple chores around the house Minimal activities outside of home two days a week	4	4 (10%)
Struggle but fulfil daily home responsibilities No outside activity, Not able to work/volunteer	5	8 (20%)
Work/volunteer limited hours Take part in limited social activities on weekends	6	11 (27.5%)
Work/volunteer for a few hours daily. Can be active at least five hours a day	7	8 (20%)
Work/volunteer for at least six hours daily Have energy to make plans for one evening social activity during the week	8	2 (5%)
Work/volunteer for at least six hours daily Have energy to make plans for one evening social activity during the week	8	2 (5%)
Work/volunteer/be active eight hours daily Take part in family life, Outside social activities limited	9	0
Normal Quality of Life	10	0

	Scores	(N=40) %
Minimal disability	0-20%	1 (2.5%)
moderate disability	21-40%	8 (20%)
severe disability	41-60%	21 (52.5%)
crippled	61-80%	9 (22.5%)

**Table-7:** Oswestry Disability Index (ODI)

Depression Severity	(%)
Minimal depression	7.5%
Mild depression	37.5%
Moderate depression	42.5%
Moderately severe depression	12.5%
Severe depression	0

**Table-8:** Association of depression in FBSS patients [N=40]

low back pain in FBSS were change position frequently to try and get back comfortable 30 (75%), sleep less well because of back 24 (60%) followed by try not to bend or kneel 22 (55%). About 15 (37.5%) patient's back was painful almost all the time [Table 5]

Quality Of Life Scale (a measure of function for people with pain) was measured by using The American Chronic Pain Association Quality of Life Scale questionnaire. About 11 (27.5%) of FBSS cases patients' had shared that they work/volunteer limited hours to take part in limited social activities on weekends. None of the patients had normal Quality of Life. Few patients 8 (20%) had struggled but fulfil daily home responsibilities [Table 6]. The physical disability was assessed using revised Oswestry Disability Index (ODI) and Roland-Morris disability questionnaire (RMDQ) for QOL and mental health using depression score with the help of a non-medico translator (VK) blinded to the study.

There was a strong negative correlation between the Quality of Life Scale & Oswestry Disability Index Score [Correlation coefficient (r): -0.877] was observed among FBSS study participants [Figure 1].

The ODI shows majority patients with FBSS were with severe disability 21 (52.5%) followed by moderate disability and crippled cases in 8 (20%) and 9 (22.5%) respectively [Table 7].

Majority of subjects with FBSS were associated with

depression. This may be because of disability. Maximum cases (42.5%) it was associated with moderate depression which was followed by mild depression 37.5% and moderately severe depression (12.5%). There was no case found to be associated with severe depression [Table 8].

**DISCUSSION**

Chronic back pain is a serious public health issue. It is associated with poor quality of life, social disruptions, disability and inability to work.<sup>21</sup> There is a specific group of chronic back pain sufferers whose pain persists despite their having undergone anatomically successful lumbosacral spine surgery. Approximately 10–40% of individuals undergoing back surgery have a poor outcome, known as having failed back surgery syndrome (FBSS).<sup>22,23</sup>

Patients with neuropathic pain experience different levels of health-related quality of life (HRQoL) which is considerably lower than those of chronic heart failure patients<sup>24</sup> and the general population<sup>25, 26</sup>. Increased pain severity is typically associated with lower levels of HRQoL<sup>27</sup> and high levels of functional disability<sup>28,29</sup> in patients with FBSS.

The commonly used disability questionnaires or scores include Oswestry Disability Index and Roland Morris Disability Questionnaire to analyze the disability in low back pain patients in addition to the VAS. Apart from these, two more scores [McGill Pain Intensity Subscale (PPI) and Pain Detect Questionnaire] are chosen in the current study which has been specific for low back pain being used in our setup routinely. However, it has not been possible to include other disease-specific scores in our study because that would make the evaluation far too exhaustive for the patient. RMDQ provides the benefit of being concise, easy to respond and may also be preferred in routine assessments.<sup>30</sup>

In the present study ODI shows majority patients with FBSS were with severe disability 21 (52.5%) followed by moderate disability and crippled cases in 8 (20%) and 9 (22.5%) respectively. Maximum cases (42.5%) it was associated with moderate depression which was followed by mild depression 37.5% and moderately severe depression (12.5%).

Psychiatric comorbidity in people with medical illness is a serious risk factor for prognosis.<sup>[31-33]</sup> Jansen GB et

al. conducted a study (low-back/joint disorder) in female patients with musculoskeletal pain and reported that in patients with fibromyalgia or myalgia, depression was found to reduce the quality of life.<sup>34</sup> Rahimi et al achieved significant findings of an association between low-back pain and level of depression.<sup>35</sup> According to the results of our study, depression is a more frequent condition among those who experienced failed back surgery. Chronic LBP causes the quality of life of patients to deteriorate, causes physical and psychological problems, and reduces quality of life by restricting daily living activities and creating functional limitations.<sup>36</sup> Moreover, a close relationship exists between depression and pain. Intensity of pain and depression negatively affect an individual's quality of life.<sup>37</sup>

### Limitations

The study limitations were mainly non-randomization, different surgeries done by different surgeons, non-availability of patients' pre-operative clinical status and disability score.

### CONCLUSION

This study revealed a high prevalence of symptoms of disability, depression and poor quality of life in patients with FBSS, which need more interdisciplinary involvement of treatment modalities for better outcome. There was a strong negative correlation between the Quality of Life Scale & Oswestry Disability Index Score. The psychological component of failed surgery and its impact on patients' lives cannot be overlooked. The best patient management is the prevention of failed back surgery and the most important element in prevention is pre-surgical patient assessment. The failure of back surgery remains a challenge for the surgeons.

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