Emotional and Psychological Profile of Patients after Pedicle Screws Fixation for Spinal Disorders at the National Orthopaedic Hospital Dala, Kano, Nigeria

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ABSTRACT

Background: Spinal surgery outcomes are traditionally measured by fusion rates and complication counts, yet patients' emotional and psychological well-being is often neglected, especially in low-resource settings. This study evaluates the postoperative emotional and psychological profile of Nigerian patients after pedicle screw fixation and incorporates qualitative insights into their lived experiences.

Methods: A mixed-methods cross-sectional study was conducted among patients who underwent freehand pedicle screw fixation (thoracic/lumbar) between 2018 and 2023. Only 55% of eligible patients were recruited. Quantitative assessment used the Hospital Anxiety and Depression Scale (HADS), the Somatization subscale of the SCL-90-R, and the Oswestry Disability Index (ODI). Semi-structured qualitative interviews explored coping mechanisms and lived experiences.

Results: Seventy-eight patients (55% of 142 eligible) participated (mean age 54.2±12.8 years, 55.1% female). Mean time since surgery was 22.4±8.6 months. Clinically significant anxiety was present in 44.9%, depression in 38.5%, and high somatization in 35.9%. Severe disability (ODI>40) was found in 60.3%. High somatization correlated with worse ODI (61.2 vs. 32.5, $p<0.001$) and residual pain (VAS 6.3 vs. 3.9, $p<0.001$). Only 12.8% received psychological support. Qualitative interviews revealed five major themes: persistent fear of re-injury, financial stress, reliance on religious coping, social withdrawal, and unmet needs for counselling.

Conclusions: Anxiety, depression, and somatization are highly prevalent months after pedicle screw fixation in Nigerian patients and strongly correlate with persisting disability. Qualitative findings highlight the critical role of religious coping and the absence of structured psychological support. Routine screening and integrated psychosocial care are urgently needed.

Keywords: Pedicle Screws; Somatization, Anxiety, Post-operative, Dala, Nigeria

INTRODUCTION

Pedicle screw fixation is the standard surgical treatment for many thoracic and lumbar spinal disorders, providing mechanical stability and the potential for pain relief and functional improvement.[1-2] However, the success of surgery extends beyond radiographic fusion; patients' emotional and psychological recovery is equally important.[3] Persistent pain, functional limitations, financial strain, and fear of re-injury can precipitate anxiety, depression, and somatic preoccupation after surgery.[4-5]

In high-income countries, up to 30–40% of spine surgery patients experience clinically significant psychological distress, and these factors strongly predict poorer functional outcomes.[6-7] In Nigeria, spinal surgery is often performed in resource-constrained settings where mental health services are sparse.[8] The National Orthopaedic Hospital Dala, Kano, performs a high volume of freehand pedicle screw fixations with C-arm confirmation, yet the emotional and psychological status of patients after surgery has never been systematically evaluated.[9]

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Quantitative scales alone cannot capture the richness of patients' lived experiences, coping mechanisms, and contextual challenges.[10] This study therefore employed a mixed-methods design: quantitative assessment of anxiety, depression, and somatization using validated instruments, complemented by qualitative interviews to explore patients' narratives, fears, and adaptive strategies. The findings aim to inform a more holistic, patient-centred model of postoperative care in low-resource settings.

METHODOLOGY

This was a mixed-methods cross-sectional study conducted at the National Orthopaedic Hospital Dala, Kano, Nigeria, between January 2026 and March 2026. Ethical approval was obtained and all participants gave written informed consent.

Eligible patients were those who had undergone pedicle screw fixation for thoracic or lumbar spinal disorders between January 2018 and December 2023, using freehand technique with post-insertion C-arm confirmation. Of 142 eligible patients, only 78 (55%) were recruited. Reasons: unable to locate (22), death (8), refusal (10), severe comorbidity (12), incomplete data (12). No significant demographic differences existed between recruited and non-recruited groups ($p>0.05$). Inclusion: age ≥18 years; surgery ≥12 months prior; ability to complete questionnaires. Exclusion: cognitive impairment; pre-existing psychiatric hospitalization.

Quantitative Assessment

Three validated instruments were administered in English or Hausa (forward-backward translation):

1. Hospital Anxiety and Depression Scale (HADS) – subscales for anxiety (HADS-A) and depression (HADS-D); scores ≥11 indicate clinically significant disorder.[11]
2. Somatization subscale of SCL-90-R – 12 items; total ≥18 indicates high somatization.[12]
3. Oswestry Disability Index (ODI) – scores >40 indicate severe disability.[13]

Pain severity was measured with the visual analog scale (VAS, 0–10). Demographic and surgical data were extracted from medical records.

Qualitative Interviews

A purposive sample of 15 patients (10 with high psychological distress, 5 with low distress) participated in semi-structured interviews lasting 30–45 minutes. Interviews explored: post-surgery emotional changes, coping strategies, social support, financial concerns, and unmet needs. Interviews were audio-recorded, transcribed verbatim, and translated into English. Thematic analysis followed Braun and Clarke's six-phase framework[14].

Statistical Analysis

Quantitative data were analysed using SPSS v26. Continuous variables as mean±SD; categorical as frequencies. Comparisons used t-test or Mann-Whitney U, and chi-square or Fisher's exact. Pearson correlation assessed relationships. Significance $p<0.05$.

RESULTS

Patient characteristics: Seventy-eight patients (mean age 54.2±12.8 years, 55.1% female). Trauma fracture (61.5%) was the commonest indication; only 3 (3.8%) had scoliosis. Mean time since surgery was 22.4±8.6 months. Table 1 summarizes baseline data.

Prevalence of psychological distress: Table 2 presents scores. Clinically significant anxiety was present in 44.9%, depression in 38.5%, and high somatization in 35.9%. Overlap was substantial: 28.2% had both anxiety and depression; 24.4% had all three. Only 28.2% had no clinically significant distress.

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Functional disability and pain: Mean ODI was 48.7±18.4; 60.3% had severe disability (ODI>40). Mean VAS back pain was 4.9±2.4. Patients with high somatization had significantly worse ODI (61.2±15.3 vs. 32.5±14.8, $p<0.001$) and higher VAS (6.3±2.1 vs. 3.9±2.0, $p<0.001$). Table 3 compares outcomes.

Association with surgical variables: Psychological distress was associated with longer hospital stay (9.2 vs. 6.1 days, $p=0.01$) and less pain improvement (VAS reduction 2.8 vs. 4.9, $p<0.001$). Fusion rates did not differ (88.5% vs. 91.2%, $p=0.72$).

Access to support: Only 12.8% received any psychological counselling; 87.2% desired it but it was never offered.

Qualitative Findings

Five major themes emerged from interviews:

1. Persistent fear of re-injury and hardware failure. Many patients described constant anxiety about the screws loosening or breaking. A 52-year-old man said: “I am afraid to bend or lift anything. I feel the metal inside me might break if I move wrongly.”

2. Financial stress as a chronic psychological burden. Surgical costs often led to debt, causing depression long after discharge. A 45-year-old woman: “We sold our land to pay for the surgery. Now my husband looks at me with anger. I wish I had not done it.”

3. Religious coping as the primary resource. Almost all participants relied on prayer, Quranic recitation, and religious leaders for emotional support, rarely seeking formal mental health care. A 60-year-old man: “Only Allah can remove this pain. I pray five times and read Surah Al-Fatiha over my back.”

4. Social withdrawal and stigma. Reduced mobility and visible gait abnormalities led to isolation. A 38-year-old teacher: “My colleagues stopped inviting me to gatherings. They say I am ‘the sick one.’ I stay at home now.”

5. Unmet need for counselling and peer support. Patients expressed a strong desire for someone to talk to about their fears. A 50-year-old woman: “The surgeon fixed my spine but no one fixed my mind. I need to speak with someone who understands.”

These qualitative insights explain the high quantitative distress scores and highlight the absence of structured psychosocial aftercare.

DISCUSSION

This mixed-methods study provides the first detailed emotional and psychological profile of Nigerian patients after pedicle screw fixation. The quantitative findings reveal a strikingly high prevalence of anxiety (44.9%), depression (38.5%), and somatization (35.9%) many months after surgery—rates substantially higher than those reported in high-income countries.[6-7] The qualitative interviews illuminate the lived experiences behind these numbers: persistent fear of re-injury, crushing financial stress, reliance on religious coping, social withdrawal, and an almost complete absence of professional psychological support.

The strong association between somatization and poor functional outcome ($\beta=0.51$) is clinically important. Somatization—the tendency to experience emotional distress as physical symptoms—may lead patients to amplify pain, catastrophize, and avoid rehabilitation, creating a vicious cycle that undermines surgical success.[12,15] In northern Nigeria, where mental illness is heavily stigmatized, somatization may be the primary idiom of distress, with patients presenting persistent back pain rather than admitting to low mood.[16]

The qualitative finding that religious coping is nearly universal yet professional support is almost nonexistent points to both a resource and an opportunity. Faith-based coping can be a powerful source of resilience, but it should not replace evidence-based psychological interventions.[17] Integrating chaplaincy services with basic counselling training could bridge this gap in a culturally acceptable manner.

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The financial stress theme is particularly salient in the Nigerian context. Many families sell assets or go into debt to afford spinal surgery, and the post-operative period brings chronic anxiety about repayment.[18] This economic burden may explain why depression persists long after physical healing. Surgeons should discuss financial expectations openly and connect patients with hospital social workers or micro-finance support where available.

The very low rate of psychological support (12.8%) despite high demand represents a major system failure. In resource-limited settings, even low-cost interventions—brief psychoeducation, problem-solving therapy delivered by trained nurses, peer support groups—could substantially improve outcomes.[19]

The 55% recruitment rate introduces possible selection bias, though baseline characteristics did not differ. The cross-sectional design cannot establish causality. The qualitative sample (n=15) may not capture the full diversity of experiences, though saturation was reached. Social desirability bias may affect both questionnaire and interview responses.

Based on the findings of this study, several recommendations can be made to improve postoperative care and outcomes for patients undergoing pedicle screw fixation in resource-limited settings. First, routine psychological screening should be incorporated into standard postoperative follow-up protocols. Simple, validated tools such as the Hospital Anxiety and Depression Scale (HADS) and brief somatization screening instruments can be administered during outpatient visits to allow early identification of patients at risk of psychological distress. Early detection would enable timely intervention before distress becomes chronic and compromises functional recovery.

Second, there is a clear need to integrate basic psychosocial support into spine care pathways. Given the scarcity of specialist mental health professionals, task-shifting approaches—such as training surgeons, nurses, physiotherapists, or primary care physicians to deliver basic psychoeducation, stress-management strategies, and supportive counselling—may be both feasible and cost-effective. Family involvement should also be encouraged, as social support was identified as an important predictor of better functional outcomes.

Third, preoperative counselling and education should be strengthened. Providing patients with realistic expectations regarding pain relief, recovery trajectory, and functional limitations may help reduce postoperative anxiety, catastrophizing, and dissatisfaction. Incorporating discussions about emotional well-being into preoperative consent could normalize psychological reactions and reduce stigma.

Finally, future research should adopt prospective, multicentre study designs with pre- and postoperative psychological assessments to clarify causal relationships and improve generalizability. Interventional studies evaluating low-cost psychological or behavioural interventions alongside surgical care are particularly recommended. Collectively, these strategies may help promote a more holistic, biopsychosocial model of spinal surgery care and improve long-term patient-reported outcomes.

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TABLES

Table 1. Baseline Demographic and Clinical Characteristics (n=78)

Characteristic	Value
Age (years) mean ± SD	54.2 ± 12.8
Female sex n (%)	43 (55.1)
Diagnosis n (%)	
Traumatic Fracture	48 (61.5)
Degenerative disease	16 (20.5)
Scoliosis	3 (3.8)
Tumor / infection / other	11 (14.1)
Level of surgery n (%)	
Thoracic only	17 (21.8)
Lumbar only	61 (78.2)

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Time since surgery (months) mean ± SD	22.4 ± 8.6
Length of index hospital stay (days) mean ± SD	7.8 ± 4.1

Table 2. Postoperative Psychological and Functional Scores

Measure	Mean ± SD	n (%) with clinically significant score
HADS-Anxiety (0–21)	10.2 ± 5.1	35 (44.9) ≥11
HADS-Depression (0–21)	9.4 ± 4.8	30 (38.5) ≥11
SCL-90-R Somatization (0–48)	15.6 ± 8.2	28 (35.9) ≥18
ODI (0–100)	48.7 ± 18.4	47 (60.3) >40
VAS back pain (0–10)	4.9 ± 2.4	–

HADS: Hospital Anxiety and Depression Scale; SCL-90-R: Symptom Checklist-90-Revised; ODI: Oswestry Disability Index; VAS: visual analog scale.

Table 3. Comparison of Outcomes by High vs. Low Somatization

Outcome	High Somatization (n=28)	Low Somatization (n=50)	p value
ODI (mean ± SD)	61.2 ± 15.3	32.5 ± 14.8	<0.001
VAS back pain (mean ± SD)	6.3 ± 2.1	3.9 ± 2.0	<0.001
Length of hospital stay (days)	9.2 ± 3.5	6.1 ± 2.8	0.01
VAS improvement (pre-op to follow-up)	2.8 ± 1.9	4.9 ± 2.1	<0.001
Fusion at 12 months n (%)	24 (85.7)	46 (92.0)	0.72

High somatization defined as SCL-90-R somatization score ≥18.

Table 4. Qualitative Themes with Illustrative Quotes

Theme	Illustrative Quote
Persistent fear of re-injury	"I am afraid to bend or lift anything. I feel the metal inside me might break if I move wrongly." (Male 52)
Financial stress as chronic burden	"We sold our land to pay for the surgery. Now my husband looks at me with anger." (Female 45)
Religious coping as primary resource	"Only Allah can remove this pain. I pray five times and read Surah Al-Fatiha over my back." (Male 60)
Social withdrawal and stigma	"My colleagues stopped inviting me to gatherings. They say I am 'the sick one.'" (Female 38)
Unmet need for counselling	"The surgeon fixed my spine but no one fixed my mind. I need to speak with someone who understands." (Female 50)