



Patient-Reported Sexual Satisfaction Following Spinal Cord Injury at the National Orthopaedic Hospital Dala, Kano, Nigeria: A Retrospective Cohort Study

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ABSTRACT

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Background: Sexual satisfaction is a critical yet understudied domain of quality of life after spinal cord injury (SCI), particularly in sub-Saharan Africa.

Objective: To evaluate patient-reported sexual satisfaction trajectories and identify predictors of good outcomes following SCI at National Orthopaedic Hospital Dala, Kano, Nigeria.

Methods: Retrospective cohort of 618 SCI patients (January 2019-June 2025). Sexual satisfaction was assessed at 3, 6, and 12 months using a structured patient-reported questionnaire. Outcomes were classified as good (satisfied) or poor (dissatisfied). Multivariate logistic regression identified predictors of good outcome.

Results: Of 618 patients, 513 (83.0%) completed 12-month follow-up. Sexual satisfaction was reported by 213/552 (38.5%) at 3 months, 242/531 (45.6%) at 6 months, and 268/513 (52.2%) at 12 months. Among complete injuries (AIS A-B, n=302), satisfaction at 12 months was 118/302 (39.1%); among incomplete injuries (AIS C-D, n=217), it was 150/217 (69.1%). Independent predictors of good outcome included incomplete injury (AOR 3.42, 95% CI 2.21-5.29), stable partnership (AOR 2.18, 95% CI 1.44-3.30), younger age (AOR 1.87, 95% CI 1.21-2.89), and absence of chronic pain (AOR 1.65, 95% CI 1.08-2.52).

Conclusion: Sexual satisfaction improves over 12 months post-SCI and is strongly predicted by injury completeness and psychosocial factors. Structured sexual rehabilitation is warranted.

KEYWORDS:

spinal cord injury, sexual satisfaction, patient-reported outcomes, Nigeria, rehabilitation, predictors

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INTRODUCTION

Sexual health is a fundamental dimension of human well-being and quality of life, yet it remains one of the most neglected domains in spinal cord injury (SCI) rehabilitation, particularly in resource-limited settings (1). The disruption of motor, sensory, and autonomic pathways following SCI profoundly affects sexual function, desire, and satisfaction, with studies consistently demonstrating that sexual dysfunction ranks among the highest priorities for individuals living with SCI (2). In Nigeria, cultural taboos surrounding sexuality, coupled with inadequate rehabilitation

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infrastructure, create a context in which sexual concerns are rarely addressed, leaving patients to navigate their sexual lives in isolation and misinformation (3).

The global literature on sexual satisfaction post-SCI has grown substantially over the past two decades. Longitudinal studies from high-income countries have demonstrated that sexual activity and interest undergo significant changes within the first six months post-discharge, with sexual satisfaction emerging as a persistent concern for both patients and their partners (4). Cross-sectional analyses have identified neurological completeness, partnership status, mood, and orgasm experience as key correlates of sexual satisfaction (5,6). However, the applicability of these findings to the Nigerian context remains uncertain, given profound differences in cultural norms, rehabilitation access, and psychosocial support systems (7).

Existing Nigerian research on SCI has predominantly focused on functional outcomes, mortality, and neurological recovery, with sexual satisfaction receiving scant attention (7). A qualitative study from Ibadan reported pervasive dissatisfaction with sexual and marital life among community-dwelling SCI patients, yet quantitative data on the prevalence and predictors of sexual satisfaction remain absent (8). This gap is particularly concerning given the rising incidence of SCI in Nigeria, driven largely by road traffic accidents and falls, which disproportionately affect young men in their productive years (9).

The clinical and psychosocial consequences of untreated sexual dysfunction after SCI are substantial. Beyond the direct impact on quality of life, sexual dissatisfaction is associated with depression, social isolation, and marital strain (10). In the Nigerian context, where sexual potency is culturally linked to masculinity and marital stability, the inability to achieve satisfactory sexual function can lead to stigmatization, relationship breakdown, and economic hardship (11). Understanding the trajectory of sexual satisfaction and identifying modifiable predictors of good outcomes is therefore essential for developing culturally appropriate rehabilitation interventions.

This study aimed to evaluate patient-reported sexual satisfaction following SCI at the National Orthopaedic Hospital Dala, Kano, Nigeria, over a 12-month follow-up period. The specific objectives were to: (1) determine the proportion of patients reporting good sexual satisfaction at 3, 6, and 12 months; (2) classify outcomes into good and poor categories; and (3) identify demographic, injury-related, and psychosocial predictors of good outcome.

METHODOLOGY

Study Design and Setting

This was a retrospective cohort study conducted at the National Orthopaedic Hospital Dala, Kano, Nigeria, a 250-bed tertiary referral centre for orthopaedic and spinal injuries

serving the northern geopolitical zone of Nigeria. The study period spanned January 2019 to June 2025.

Participants and Eligibility

All patients with traumatic or non-traumatic SCI who were admitted and managed at the facility during the study period were screened for eligibility. Inclusion criteria were: (1) age ≥ 18 years; (2) diagnosis of SCI confirmed by clinical examination and imaging (MRI or CT); (3) completion of acute inpatient rehabilitation; and (4) at least one documented follow-up assessment. Patients with pre-existing sexual dysfunction unrelated to SCI, severe cognitive impairment precluding self-report, or who died during the acute admission were excluded.

A total of 618 patients met the inclusion criteria and constituted the study cohort.

Data Collection

Data were extracted from medical records and a structured patient-reported follow-up questionnaire administered at routine clinic visits. The questionnaire was developed based on validated SCI sexual health outcome measures adapted for the Nigerian context (12). It included items on sexual interest, frequency of sexual activity, ability to achieve orgasm, satisfaction with sexual function, and partner-related concerns. Responses were recorded on a five-point Likert scale. For the purpose of this analysis, sexual satisfaction was dichotomized: "good outcome" (satisfied or very satisfied) and "poor outcome" (neutral, dissatisfied, or very dissatisfied).

Follow-up assessments were scheduled at 3-, 6-, and 12-months post-discharge. Of the 618 patients, 66 were lost to follow-up after the 3-month assessment, an additional 21 were lost by 6 months, and a further 18 were lost by 12 months, yielding a total of 105 patients lost to follow-up by one year. The final analytical cohort at 12 months comprised 513 patients (83.0% retention).

Outcome Classification

The primary outcome was patient-reported sexual satisfaction at 12 months, classified as good or poor. Secondary outcomes included satisfaction at 3 and 6 months and changes in satisfaction status over time.

Statistical Analysis

Data were analysed using SPSS version 26.0. Categorical variables were summarized as frequencies and percentages, while continuous variables were expressed as mean $\pm$ standard deviation or median with interquartile range, as appropriate. The chi-square test or Fisher's exact test was used to compare proportions. Multivariate logistic regression was performed to identify independent predictors of good sexual satisfaction at 12 months. Variables with $p < 0.20$ in univariate analysis were entered into the multivariate model. Adjusted odds ratios (AOR) with 95% confidence intervals (CI) were reported. A p -value < 0.05 was considered statistically significant.

Ethical Considerations

Ethical approval was obtained from the Health Research Ethics Committee of National Orthopaedic Hospital Dala, Kano. The requirement for informed consent was waived for this retrospective analysis of routinely collected clinical data. The consent waiver was granted on the condition that all data were anonymized and de-identified prior to analysis, and that the study posed no more than minimal risk to participants. No identifiable patient information was accessed or published.

RESULTS

Cohort Characteristics

Of the 618 patients initially enrolled, 513 (83.0%) completed the 12-month follow-up and constituted the analytical cohort. The mean age was 38.4 ± 12.6 years, with a male predominance (n=412, 79.4%). Road traffic accidents were the leading cause of injury (n=308, 59.3%), followed by falls (n=124, 23.9%). Complete injuries (AIS A-B) accounted for 302 patients (58.2%), while incomplete injuries (AIS C-D) accounted for 217 patients (41.8%). The median time from injury to first assessment was 4.2 months (IQR 2.8-6.5).

Table 1: Sociodemographic and Injury Characteristics of the Analytical Cohort (n=519)

Characteristic	Category	n (%)
Age (years)	Mean ± SD	38.4 ± 12.6
Sex	Male	412 (79.4)
	Female	107 (20.6)
Marital status	Married/Stable partner	298 (57.4)
	Single/No partner	221 (42.6)
Aetiology	Road traffic accident	308 (59.3)
	Falls	124 (23.9)
	Other	87 (16.8)
Injury completeness	Complete (AIS A-B)	302 (58.2)
	Incomplete (AIS C-D)	217 (41.8)
Neurological level	Cervical	148 (28.5)
	Thoracic	223 (43.0)
	Lumbar/Sacral	148 (28.5)
Chronic pain	Present	276 (53.2)
	Absent	243 (46.8)

Sexual Satisfaction Over Time

Sexual satisfaction rates showed a consistent upward trajectory over the 12-month follow-up period. At 3 months, 213 of 552 patients (38.5%) reported good sexual satisfaction.

By 6 months, this had increased to 242 of 531 (45.6%), and by 12 months, 268 of 519 patients (52.2%) reported good sexual satisfaction.

Table 2: Sexual Satisfaction at 3, 6, and 12 Months (n=519)

Time Point	Good Outcome n (%)	Poor Outcome n (%)
3 months	213/552 (38.5)	339/552 (51.5)
6 months	242/531 (45.6)	277/531 (54.4)
12 months	268/519 (52.2)	251/513 (47.8)

The proportion of patients reporting good sexual satisfaction increased by 14.7 percentage points from 3 to 12 months (41.0% to 51.6%). This improvement was statistically significant (p<0.001 for trend).

Subgroup Analysis by Injury Completeness

Subgroup analysis revealed marked differences in sexual satisfaction based on injury completeness. Among patients

with complete injuries (AIS A-B, n=302), 118 (39.1%) reported good sexual satisfaction at 12 months. In contrast, among patients with incomplete injuries (AIS C-D, n=217), 150 (69.1%) reported good sexual satisfaction at 12 months. The difference was statistically significant (p<0.001). This is shown in Table 3.

Table 3: Sexual Satisfaction at 12 Months by Injury Completeness

Injury Category	Total n	Good Outcome n (%)	Poor Outcome n (%)
Complete (AIS A-B)	302	118 (39.1)	184 (60.9)
Incomplete (AIS C-D)	217	150 (69.1)	67 (30.9)
Total	519	268 (52.6)	251 (48.4)

Predictors of Good Sexual Satisfaction

Multivariate logistic regression identified four independent predictors of good sexual satisfaction at 12 months (Table 4). Incomplete injury (AIS C–D) was the strongest predictor (AOR 3.42, 95% CI 2.21-5.29, $p<0.001$), followed by stable

partnership (AOR 2.18, 95% CI 1.44-3.30, $p<0.001$), younger age (<40 years) (AOR 1.87, 95% CI 1.21-2.89, $p=0.005$), and absence of chronic pain (AOR 1.65, 95% CI 1.08-2.52, $p=0.021$).

Table 4: Independent Predictors of Good Sexual Satisfaction at 12 Months (Multivariate Logistic Regression)

Predictor	AOR	95% CI	p-value
Incomplete injury (AIS C-D)	3.42	2.21-5.29	<0.001
Stable partnership	2.18	1.44-3.30	<0.001
Age <40 years	1.87	1.21-2.89	0.005
Absence of chronic pain	1.65	1.08-2.52	0.021

DISCUSSION

This study provides the first quantitative evaluation of patient-reported sexual satisfaction following SCI in northern Nigeria. The findings demonstrate that sexual satisfaction improves progressively over the first 12 months post-injury, with just over half of patients (51.6%) reporting good satisfaction at one year. Incomplete injury, stable partnership, younger age, and absence of chronic pain emerged as independent predictors of good outcome. These results challenge the prevailing nihilism surrounding sexual rehabilitation in Nigerian SCI care and provide a foundation for targeted interventions.

The 12-month satisfaction rate of 52.6% in our cohort is lower than that reported in some high-income settings. Fisher et al., in a longitudinal study from the United States, found that by six months post-discharge, individuals had made significant changes in sexual activity and interest, with concerns increasingly focused on partner and self-satisfaction (4). Siosteen et al. reported that 57% of SCI subjects rated their sexual relations as satisfying or rather satisfying (13). The slightly lower rate in our cohort may reflect differences in rehabilitation infrastructure, cultural attitudes towards sexuality, and the high prevalence of chronic pain (53.2%) in our population.

The finding that incomplete injury is the strongest predictor of good sexual satisfaction is consistent with the broader literature. Otero-Villaverde et al., in a study of women with SCI, found that lack of sensation in the genital area was significantly associated with sexual activity (14). Gérard et al. demonstrated that neurological factors did not emerge as significant predictors of sexual satisfaction, with orgasm experience and psychological factors instead dominating (5). Our results suggest that while injury completeness matters, it is not determinative; nearly 40% of patients with complete

injuries still reported good sexual satisfaction, underscoring the importance of psychosocial and rehabilitative factors.

The role of stable partnership as a predictor of good outcome aligns with findings from Zanin et al., who reported that individuals who started a relationship after injury were more sexually satisfied than those whose relationships predated the injury (15). This suggests that relationship dynamics, rather than merely the presence of a partner, influence sexual satisfaction. In the Nigerian cultural context, where marital stability is highly valued and sexual potency is often linked to masculine identity, the protective effect of a stable partnership may be particularly pronounced (16). Our finding that younger age predicts good outcome is consistent with the literature showing that younger individuals with SCI exhibit greater sexual interest and adaptation (16).

The progressive improvement in sexual satisfaction from 3 to 12 months observed in our cohort mirrors the trajectory described by Fisher et al., who identified the period between inpatient rehabilitation and six months post-discharge as critical for sexual health interventions (4). Our data extend this observation, demonstrating continued improvement up to 12 months. This has important implications for the timing of sexual rehabilitation services in Nigeria: interventions should not be limited to the acute phase but should be integrated into long-term follow-up care.

The clinical and policy implications of these findings are substantial. First, the high prevalence of poor sexual satisfaction (48.4% at 12 months) indicates an urgent need for structured sexual rehabilitation programmes within Nigerian SCI care. Current practice at National Orthopaedic Hospital Dala, like most Nigerian centres, focuses predominantly on mobility, bowel and bladder management, and pressure sore prevention, with sexual health rarely addressed (17). Second, the identification of modifiable predictors-chronic pain and

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partnership status-suggests that pain management and relationship counselling should be integrated into rehabilitation protocols. Third, the finding that complete injury does not preclude good sexual satisfaction should be communicated to patients to counter the fatalism that often accompanies severe SCI.

This study has several limitations. First, its retrospective design precluded the use of validated, condition-specific sexual satisfaction instruments, and the reliance on a structured questionnaire may have introduced measurement bias. Second, the 16.0% loss to follow-up, while acceptable for a longitudinal cohort, may have introduced attrition bias if patients who dropped out differed systematically from those retained. Third, the single-centre design limits generalizability to other Nigerian regions with different cultural and healthcare contexts. Fourth, the absence of a non-SCI comparison group prevents quantification of the incremental effect of SCI on sexual satisfaction. Fifth, the study did not assess the content or quality of sexual counselling received, which may have influenced outcomes. Sixth, the consent waiver, while ethically justified for this retrospective analysis, precluded collection of additional data on sensitive topics that might have enriched the analysis.

Future research should employ validated sexual health outcome measures for SCI, such as the Sexual Interest and Satisfaction Scale (SIS) or the Sexual Activity and Satisfaction Scale (SAS), adapted and validated for Nigerian populations (18). Prospective designs with standardised counselling interventions would allow causal inference regarding the effect of rehabilitation on sexual satisfaction. Qualitative studies exploring the lived experiences of Nigerian SCI patients navigating sexual relationships would provide essential context for developing culturally appropriate interventions.

In conclusion, sexual satisfaction following SCI in northern Nigeria improves over the first-year post-injury, with incomplete injury, stable partnership, younger age, and absence of chronic pain predicting good outcome. The findings challenge the therapeutic nihilism that surrounds sexual rehabilitation in this setting and support the integration of structured sexual health services into SCI care. While complications and poor outcomes occur, the majority of patients achieve satisfactory sexual lives with appropriate rehabilitation and support.

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