



Association Between Demographic/Socioeconomic Factors and Postoperative Oral Health Outcomes Among Oral/Maxillofacial Surgery Patients in a Lagos General Hospital

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ABSTRACT

Background: Oral and maxillofacial surgical procedures are associated with varying degrees of postoperative disability, affecting patients' physical function and psychosocial well-being. Although socioeconomic and demographic factors are known to influence health outcomes, their role in postoperative oral health outcomes in resource-limited settings remains unclear.

Objectives: To assess the association between demographic and socioeconomic factors and postoperative oral health outcomes among patients attending the Oral and Maxillofacial Surgery Unit of Alimosho General Hospital, Igando, Lagos, Nigeria.

Methods: This hospital-based prospective cross-sectional study involved 96 patients who underwent oral and maxillofacial surgery between August 2025 and April 2026. A consecutive sampling method was used, and eligible participants were recruited during postoperative follow-up visits within six months after surgery. Data were collected using a structured questionnaire that included the Facial Disability Index (FaDI) to assess physical and social disability. The primary surgical procedures performed and primary clinical indications for surgery were recorded as separate variables. The questionnaire was interviewer-administered in English and, where necessary, translated verbally to improve comprehension. FaDI scores were summarized and categorized for analysis. Associations were tested using chi-square and Fisher's exact tests at $p < 0.05$.

Results: A high prevalence of postoperative disability was observed. No statistically significant associations were found between most demographic or socioeconomic variables and outcomes. Employment status was significantly associated with physical function outcomes ($p = 0.028$). In contrast, the indication for surgery was associated with both physical function ($p = 0.039$) and social well-being outcomes ($p = 0.023$).

Conclusion: Postoperative disability remains high. Clinical factors, particularly surgical indication, were more strongly associated with postoperative outcomes in this study population. Structured rehabilitation and psychosocial support should be integrated into postoperative care. Larger, multicentre longitudinal studies are recommended.

Keywords: Postoperative oral health outcomes, maxillofacial surgery, socioeconomic factors, postoperative disability, Nigeria

INTRODUCTION

Oral and maxillofacial surgery (OMFS) plays a critical role in restoring function, aesthetics, and quality of life in patients with facial and oral conditions. However, postoperative recovery extends beyond surgical success to include functional, psychological, and social dimensions. These postoperative experiences may significantly influence oral health-related quality of life, return to daily activities, nutritional intake, communication, and psychosocial well-being. Demographic and socioeconomic factors such as age, income, education, and occupation are well-established determinants of health outcomes, which may influence disease severity at presentation, treatment accessibility, postoperative recovery experiences, and oral health-related quality of life.^{1, 2} In oral health, these disparities are reflected in unequal disease burden, delayed presentation, and variations in treatment outcomes.^{3, 4}

In Nigeria, socioeconomic inequalities, limited health insurance coverage, and restricted access to specialized care further exacerbate these challenges. Socioeconomic inequalities may contribute to delayed presentation, reduced access to specialist care, and challenges with continuity of postoperative follow-up due to financial constraints and reduced access to follow-up care.^{4, 5}

Demographic factors such as age and sex have also been associated with differences in healing, pain perception, and postoperative recovery.^{6, 7} Theoretical models such as the Social Determinants of Health and Andersen's Behavioural Model further support the concept that socioeconomic and demographic factors may shape postoperative recovery, healthcare engagement, and oral health-related quality of life.⁸ Despite this evidence, there is limited research examining the combined influence of demographic and socioeconomic factors on postoperative oral health outcomes in oral and maxillofacial surgery within Nigeria. Although several studies have examined oral health inequalities and oral health-related quality of life, there remains limited evidence regarding the relationship between socioeconomic characteristics and postoperative oral health outcomes among oral and maxillofacial surgery patients in sub-Saharan Africa.^{9, 10}



In Nigeria, particularly, few studies have explored how demographic and socioeconomic characteristics relate to postoperative functional and psychosocial recovery following oral and maxillofacial surgical procedures. Understanding these relationships may help identify vulnerable patient groups and improve postoperative care strategies in resource-limited settings.

This study, therefore, aimed to evaluate the association of demographic and socioeconomic factors with postoperative oral health outcomes among patients attending Alimosho General Hospital, Igando, Lagos.

METHODS

Study Design and Setting

This was a hospital-based cross-sectional study conducted at the Oral and Maxillofacial Surgery Unit of Alimosho General Hospital, Igando, Lagos State, Nigeria, between August 2025 and April 2026. Data were collected prospectively during postoperative follow-up visits.

Study Population: Eligible patients presenting consecutively during the study period were recruited. All patients who underwent oral and maxillofacial surgery within the study period and met the inclusion criteria were invited to participate. Of 102 eligible patients, 96 (94.1%) consented and were included in the study.

Inclusion/Exclusion Criteria: Patients aged 10 years and above who had undergone oral or maxillofacial surgery within the preceding six months and were able to provide informed consent (or assent with parental consent where applicable) were included. Patients with cognitive impairment or incomplete questionnaire responses were excluded.

Sample Size Determination: Given the exploratory nature of this hospital-based cross-sectional study, all eligible patients presenting during the study period were recruited consecutively until the end of the study period.

Data Collection: Data were collected using a structured questionnaire and the Facial Disability Index (FaDI), a validated instrument for assessing physical and social disability.¹¹ The questionnaire was interviewer-administered during postoperative follow-up visits. Surgical procedures performed and primary clinical indications for surgery were recorded as separate variables. The FaDI was used to assess functional and psychosocial dimensions of postoperative disability. Although originally developed for patients with facial neuromuscular disorders, the FaDI has been utilized in studies assessing facial functional limitation and psychosocial well-being—domains relevant to oral and maxillofacial surgery patients. For this study, higher FaDI disability scores indicated poorer postoperative outcomes. Median values were used to categorize participants into lower and higher disability groups for exploratory analysis. Participants were asked to select postoperative experiences from a predefined checklist, including pain, swelling, bleeding, facial numbness, and others.

Validity and Reliability: The FaDI has demonstrated acceptable validity and reliability in assessing facial functional limitation and psychosocial well-being in previous studies.^{12, 13} However, the instrument has not been specifically validated among Nigerian oral and maxillofacial surgery patients, and this limitation should be considered when interpreting the findings.

Data Analysis: Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 28. Continuous variables were summarized using mean and standard deviation, while categorical variables were presented as frequencies and percentages. Associations between categorical variables and postoperative oral health outcome categories were assessed using chi-square or Fisher's exact tests where appropriate. Effect sizes were estimated using odds ratios and Cramér's V. Statistical significance was set at $p < 0.05$. Findings were interpreted cautiously due to the exploratory nature of the analysis.

Ethical Considerations: Ethical approval was obtained from the Lagos State University Teaching Hospital Health Research Ethics Committee (LASUTH-HREC). Written informed consent was obtained from all adult participants before enrolment. For participants younger than 18 years, assent was obtained alongside parental or guardian consent.



RESULTS

A total of 96 participants were included in the study. The mean age was 30.8 ± 14.3 years. The sociodemographic and socioeconomic characteristics of the participants are presented in Table 1.

Table 1: Sociodemographic and Socioeconomic Characteristics (n = 96)

Variable	Category	Frequency	Percentage (%)
Age group (years)	<30	44	45.8
	30–44	33	34.4
	45–59	19	18.8
Sex	Male	55	57.3
	Female	41	42.7
Marital status	Single	59	61.5
	Married	37	38.5
Educational level	None	27	28.1
	Primary	23	24.0
	Secondary	28	29.2
	Tertiary	18	18.8
Ethnic group	Yoruba	39	40.6
	Igbo	27	28.1
	Others	30	31.3
Employment status	Employed	49	51.0
	Self-employed	21	21.9
	Unemployed	26	27.1
Monthly income level (₦)	<30,000	46	47.9
	51,000–100,000	18	18.8
	101,000–200,000	17	17.7
	>200,000	15	15.6
Type of housing	Owned	25	26.0
	Self-rented	37	38.6
	Shared	34	35.4
Basic amenities*	Clean water	64	66.7
	Electricity	64	66.7
	Waste disposal	40	41.7
	None	14	14.6



Transport to hospital	Private	46	47.9
	Public	50	52.1

*Multiple responses allowed

The majority of participants were younger than 30 years (45.8%), male (57.3%), and single (61.5%). Approximately 47.9% earned less than ₦30,000 monthly, while 38.6% lived in self-rented accommodation.

Clinical Characteristics and Return to Normal Activities

The clinical characteristics of the participants and the time taken to return to normal activities are presented in Table 2.

Table 2: Clinical Characteristics and Recovery Pattern (n = 96)

Variable	Category	Frequency	Percentage (%)
Primary surgical procedure performed	Cyst removal	20	20.8
	Incisional/excisional biopsies	15	15.6
	IMF/ORIF for fractures	18	18.8
	Surgical extraction	9	9.4
	Others	19	19.8
Primary clinical indication for surgery	Trauma	21	21.9
	Infection/abscess	16	16.7
	Tumour/cyst	21	21.9
	Others	38	39.6
Postoperative experiences*	Pain	47	49.0
	Swelling	46	47.9
	Bleeding	48	50.0
	Facial numbness	45	46.9
Days to return to normal activity	1–3 days	29	30.2
	4–7 days	28	29.2
	8–14 days	13	13.5
	>14 days	26	27.1

*Multiple responses allowed

Surgical procedures and clinical indications were analyzed separately; therefore, frequencies may not correspond directly because some diagnoses required multiple or overlapping procedures. Some procedures involved combined cyst removal and biopsy.

Cyst removal was the most commonly performed procedure, followed by jaw fracture repair and biopsy. The primary indications for surgery included trauma, tumour or cyst, and infection or abscess. Common postoperative experiences included pain, bleeding, swelling, and facial numbness. Participants also demonstrated variability in recovery time, with some resuming normal activities within a few days while others required more than two weeks.



Postoperative Oral Health Outcomes

Postoperative oral health outcomes assessed using the FaDI are summarized in Table 3. FaDI physical and social well-being scores range from 0 to 100, with lower scores indicating greater disability and poorer oral health-related quality of life.

Table 3: Facial Disability Index

Subscale	Item	Mean ± SD
Physical Function	Difficulty keeping food in mouth	3.66 ± 1.3
	Difficulty drinking from a cup	3.31 ± 1.5
	Difficulty speaking	3.61 ± 1.1
	Eye tearing/dryness	3.34 ± 1.5
	Difficulty brushing/rinsing	4.18 ± 1.3
	Overall Physical Score	52.37 ± 13.9
Social/Well-being	Felt calm and peaceful	3.79 ± 1.3
	Isolation from others	3.78 ± 1.4
	Irritability	3.80 ± 1.5
	Sleep disturbance	3.61 ± 1.3
	Avoiding social activities	3.40 ± 1.3
	Overall Social Score	53.46 ± 12.2

More than half of the participants experienced high physical function disability, while a greater proportion reported high social and well-being disability. In the physical function domain, the greatest difficulty was reported in brushing teeth or rinsing the mouth, followed by eating and speech. In the social and well-being domain, the highest scores were recorded for irritability toward others and difficulty feeling calm and peaceful.

Association Between Demographic Factors and Outcomes

The association between sociodemographic variables and postoperative oral health outcomes is shown in Table 4.

Table 4: Association Between Postoperative Oral Health Outcomes and Sociodemographic Characteristics

Variable	Category (n)	Physical Low n (%)	Physical High n (%)	p-value	Social Low (%)	n	Social High (%)	n	p-value
Age (years)	<30 (44)	21 (47.7)	23 (52.3)	0.724	14 (31.8)		30 (68.2)		0.543
	30–44 (33)	15 (45.5)	18 (54.5)		9 (27.3)		24 (72.7)		
	45–59 (19)	7 (36.8)	12 (63.2)		8 (42.1)		11 (57.9)		
Sex	Male (55)	24 (43.6)	31 (56.4)	0.792	17 (30.9)		38 (69.1)		0.737
	Female (41)	19 (46.3)	22 (53.7)		14 (34.1)		27 (65.9)		
Marital status	Single (59)	27 (45.8)	32 (54.2)	0.809	20 (33.9)		39 (66.1)		0.671
	Married (37)	16 (43.2)	21 (56.8)		11 (29.7)		26 (70.3)		



Sex	Male (55)	24 (43.6)	31 (56.4)	0.792	17 (30.9)	38 (69.1)	0.737
	Female (41)	19 (46.3)	22 (53.7)		14 (34.1)	27 (65.9)	
Marital status	Single (59)	27 (45.8)	32 (54.2)	0.809	20 (33.9)	39 (66.1)	0.671
	Married (37)	16 (43.2)	21 (56.8)		11 (29.7)	26 (70.3)	
Education	None (27)	9 (33.3)	18 (66.7)	0.328	13 (48.1)	14 (51.9)	0.185
	Primary (23)	9 (39.1)	14 (60.9)		7 (30.4)	16 (69.6)	
	Secondary (28)	15 (52.6)	13 (46.4)		6 (21.4)	22 (78.6)	
	Tertiary (18)	10 (55.6)	8 (44.4)		5 (27.8)	13 (72.2)	
Employment	Employed (49)	28 (57.1)	21 (42.9)	0.028*	19 (38.8)	30 (61.2)	0.353
	Self-employed (21)	5 (23.8)	16 (76.2)		6 (28.6)	15 (71.4)	
	Unemployed (26)	10 (38.5)	16 (61.5)		6 (23.1)	20 (76.9)	
Income (₦)	<30,000 (46)	25 (54.3)	21 (45.7)	0.316	18 (39.1)	28 (60.9)	0.382
	51–100k (18)	6 (33.3)	12 (66.7)		3 (16.7)	15 (83.3)	
	101–200k (17)	7 (41.2)	10 (58.8)		5 (29.4)	12 (70.6)	
	>200k (15)	5 (33.3)	10 (66.7)		5 (33.3)	10 (66.7)	

Most variables, including age, sex, marital status, educational level, and income level, were not significantly associated with outcomes ($p > 0.05$). However, employment status was significantly associated with physical disability ($p = 0.028$), with employed participants demonstrating a lower proportion of high physical disability compared to unemployed participants (OR = 0.46, 95% CI: 0.23–0.92), indicating better functional outcomes among employed individuals.

Association Between Socioeconomic and Clinical Factors and Outcomes

The association between socioeconomic and clinical characteristics and postoperative oral health outcomes is presented in Tables 5A and 5B.

Table 5A: Association Between Socioeconomic Characteristics and Postoperative Oral Health Outcomes (n = 96)

Variable	Category	Physical Low n (%)	Physical High n (%)	p-value	Social Low (%)	n	Social High (%)	n	p-value
Type of insurance	No health insurance	25 (46.3)	29 (53.7)	0.737	16 (29.6)		38 (70.4)		0.527
	Private insurance	18 (42.9)	24 (57.1)		15 (35.7)	27 (64.3)			
Type of housing	Owned	11 (44.0)	14 (56.0)	0.815	10 (40.0)		15 (60.0)		0.388



	Self-rented	18 (48.6)	19 (51.4)		9 (24.3)	28 (75.7)	
	Shared	14 (41.2)	20 (58.8)		12 (35.3)	22 (64.7)	
Basic amenities	Clean water	7 (38.9)	11 (61.1)	0.186	8 (44.4)	10 (55.6)	0.629
	Water & electricity	13 (54.2)	11 (45.8)		8 (33.3)	16 (66.7)	
	Water, elect. & waste	14 (35.0)	26 (65.0)		11 (27.5)	29 (72.5)	
	None	5 (35.7)	9 (64.3)		4 (28.6)	10 (71.4)	
Transport to hospital	Private	23 (50.0)	23 (50.0)	0.325	15 (32.6)	31 (67.4)	0.949
	Public	20 (40.0)	30 (60.0)		16 (32.0)	34 (68.0)	

Table 5B: Association Between Clinical Characteristics and Postoperative Oral Health Outcomes (n = 96)

Variable	Category	Physical Low (%)	Physical High (%)	p-value	Social Low (%)	Social High (%)	p-value
Primary surgical procedure performed	Cyst removal	9 (45.0)	11 (55.0)	0.610	5 (25.0)	15 (75.0)	0.161
	Incisional/excisional biopsies	7 (46.7)	8 (53.3)		5 (33.3)	10 (66.7)	
	IMF/ORIF for facial fractures	8 (44.4)	10 (55.6)		4 (22.2)	14 (77.8)	
	Surgical extraction	6 (66.7)	3 (33.3)		1 (11.1)	8 (88.9)	
	Others	13 (38.2)	21 (61.8)		16 (47.1)	18 (52.9)	
Primary clinical indication for surgery	Trauma	13 (61.9)	8 (38.1)	0.039*	12 (57.1)	9 (42.9)	0.023*
	Infection/abscess	5 (31.3)	11 (68.8)		2 (12.5)	14 (87.5)	
	Tumour/cyst	20 (52.6)	18 (47.4)		12 (31.6)	26 (68.4)	
	Others	5 (23.8)	16 (76.2)		5 (23.8)	16 (76.2)	
Days to return to normal activity	1–3 days	12 (41.4)	17 (58.6)	0.551	7 (24.1)	22 (75.9)	0.441



4–7 days	16 (55.2)	13 (44.8)	10 (34.5)	19 (65.5)
8–14 days	4 (33.3)	8 (66.7)	6 (50.0)	6 (50.0)
>14 days	11 (42.3)	15 (57.7)	8 (30.8)	18 (69.2)

Socioeconomic variables, including health insurance status, housing type, access to basic amenities, and means of transportation, were not significantly associated with either physical function or social well-being outcomes ($p > 0.05$). All insured participants had private insurance; no participants reported public health insurance coverage. Similarly, the primary surgical procedure performed and recovery duration showed no significant associations ($p > 0.05$). However, the primary clinical indication for surgery was significantly associated with both physical function ($p = 0.039$, Cramér's $V = 0.29$) and social well-being outcomes ($p = 0.023$, Cramér's $V = 0.31$), indicating moderate effect sizes, with trauma-related cases demonstrating lower proportions of high postoperative disability.

DISCUSSION

Findings: This study demonstrated a substantial burden of postoperative disability affecting both physical function and psychosocial well-being among oral and maxillofacial surgery patients at our centre. Difficulties with oral hygiene practices, feeding, speech, irritability, and social interaction were commonly reported, highlighting the multidimensional impact of oral and maxillofacial surgical procedures on postoperative quality of life, including functional limitations and emotional distress.^{13, 14}

Despite strong evidence linking lower socioeconomic status with poorer health outcomes, no statistically significant associations were observed between most socioeconomic variables and postoperative oral health outcomes.^{15, 16} This contrasts with findings from previous studies that reported poorer outcomes among individuals from lower socioeconomic backgrounds.^{3, 17} This finding should be interpreted cautiously, as the relatively small sample size, socioeconomic homogeneity of the study population, and exploratory analytical approach may have limited the ability to detect smaller but clinically relevant associations.

Similarly, demographic factors such as age and sex were not significantly associated with postoperative oral health outcomes in this study. While previous studies have shown that age and sex can affect healing and oral health-related quality of life, the uniformly high level of postoperative disability observed in this study may have masked these differences.^{18, 19}

Employment status demonstrated a statistically significant association with physical function outcomes, which may reflect differences in occupational demands, economic stability, recovery expectations, or ability to resume routine activities following surgery.^{20–22} However, because of the cross-sectional design and absence of multivariable analysis, this finding should be interpreted cautiously. In addition, the primary clinical indication for surgery was significantly associated with postoperative oral health outcomes, suggesting that underlying pathology may influence recovery patterns, as reported in previous studies on surgical outcomes.^{23, 24}

Implications: Clinical variables demonstrated stronger associations with postoperative oral health outcomes within this study population. This may reflect the standardized care provided at the study centre, which could mitigate disparities typically associated with socioeconomic status. The absence of significant associations may also be explained by the relative socioeconomic homogeneity of the study population, which may have minimized observable differences.^{25, 26} The heterogeneity of surgical procedures and operator-related factors, including differences in surgical complexity and technical expertise, may also have influenced postoperative experiences and recovery outcomes. Overall, the high burden of postoperative disability highlights the need for comprehensive postoperative care that extends beyond surgical management to include functional rehabilitation, patient education, and psychosocial support.

Trade-Offs (Limitations): This study has several limitations. First, the cross-sectional design limits causal inference and only permits the assessment of associations at a single time point. Second, the relatively small sample size may have limited the ability to detect smaller but clinically important associations, particularly across subgroup analyses. Third, the heterogeneity of surgical procedures may have masked outcome differences related to specific procedures or diagnoses. Fourth, categorisation of FaDI scores using a median split may have reduced statistical sensitivity and resulted in some loss of information.

Additionally, multiple bivariate analyses were performed without adjustment for potential confounding variables or multiplicity, increasing the risk of type I error. The absence of multivariable regression analysis limits the interpretation of independent associations. The use of the FaDI, although relevant to functional and psychosocial assessment, has not been specifically



validated among Nigerian oral and maxillofacial surgery patients. Furthermore, the absence of baseline preoperative FaDI assessment limited the ability to distinguish pre-existing from postoperative disability. Finally, the study was conducted at a single centre, which may limit the generalisability of the findings to other settings.

Take-Home (Conclusion): Postoperative disability affecting physical and psychosocial well-being was common among oral and maxillofacial surgery patients in this study. Although most demographic and socioeconomic variables were not significantly associated with postoperative outcomes, employment status and surgical indication demonstrated significant associations with some outcome domains. These findings highlight the importance of comprehensive postoperative care strategies incorporating rehabilitation, psychosocial support, patient education, and measures aimed at encouraging earlier presentation for treatment. These findings underscore the importance of integrating structured rehabilitation and psychosocial support into routine postoperative care.

Expectations for Future Research: Future studies should utilize larger multicentre longitudinal designs with baseline preoperative assessments and multivariable analytical approaches to better clarify independent predictors of postoperative oral health outcomes.

RECOMMENDATIONS

Public health education aimed at promoting earlier presentation for oral and maxillofacial conditions may also help reduce disease severity and postoperative morbidity.

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