

Original Research

Impact of COVID-19 Outbreak on Dental Services Utilisation Among Patients Visiting a Tertiary Health Facility in South-South, Nigeria

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Abstract

Background: COVID-19 caused significant disruption to dental services worldwide, with Nigeria restricting care to emergencies, which could have worsened existing access barriers. Empirical data from the South-South region remains limited. Objective: To evaluate the impact of COVID-19 on dental service utilisation, barriers, perceived oral health outcomes, and post-pandemic recovery among patients at a tertiary facility in South-South Nigeria.

Methodology: A descriptive cross-sectional study of 120 adults attending the University of Benin Teaching Hospital dental clinic from March 2020 to December 2021, using an interviewer-administered questionnaire. Data were analysed with SPSS v25.

Results: Utilisation sharply declined during the pandemic, with 53.3% not attending the clinic versus 35.8% before the pandemic. Major barriers included fear of infection (29.2%) and lack of information about services (16.7%). Post-pandemic attendance improved but remained slightly below pre-pandemic levels. While 40.8% reported improved oral health due to increased self-care, 17.5% reported deterioration. Most participants were satisfied with current service availability (58.3%) and perceived improved access (60.8%).

Conclusion: COVID-19 significantly reduced dental utilisation due to fear and restricted access. Although recovery is underway, preventive visits remain low. Public education, tele-dentistry, and enhanced emergency preparedness are recommended.

Keywords: Impact, COVID-19, Dental services, Utilisation

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Introduction

The coronavirus disease 2019 (COVID-19) pandemic, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), disrupted health systems globally, with dentistry among the most critically affected due to high aerosol generation and proximity to the oropharyngeal region during treatment.^[1,2] In Nigeria, the Nigeria Centre for Disease Control (NCDC) directed dental facilities to limit care strictly to emergencies, to reduce transmission risk and conserve personal protective equipment (PPE).^[3] While necessary, this restriction further intensified pre-existing challenges in oral health utilisation.

The South-South region of Nigeria relies heavily on tertiary hospitals for advanced dental care,^[4] making the potential impact of pandemic-related service disruptions particularly significant in this zone. Internationally, substantial declines in dental attendance were reported, with utilisation dropping by as much as 38% in the United States and China during the peak of the pandemic.^[5,6] Reported reasons for reduced dental visits included fear of infection, loss of income, mobility restrictions, and limited-service availability.^[7,8] Such delayed care has been associated with worsening caries progression, periodontal complications, and preventable dental emergencies.^[9]

Although adaptive measures such as teledentistry emerged globally as innovative alternatives,^[10] their uptake and effectiveness in the Nigerian context—particularly within tertiary care settings in the South-South—remain unclear. There is currently insufficient evidence on how the pandemic specifically affected dental service utilisation patterns in this region.

This study aimed to assess the impact of the COVID-19 pandemic on dental service utilisation in a tertiary health facility in South-South Nigeria, to inform future preparedness and resilience strategies for oral healthcare systems.

Materials and Methods

Research Design

This study employed a descriptive cross-sectional research design to evaluate the impact of the COVID-19 pandemic on the utilisation of dental services among patients attending a tertiary health facility in South-South Nigeria. This design was selected due to its capacity to facilitate data collection at a specific point in time, making it suitable for identifying trends, patterns, and factors associated with dental service utilisation during and after the pandemic.

Study Area

The investigation was conducted at the Dental Clinic of the University of Benin Teaching Hospital, a tertiary health facility situated in Edo State, South-South Nigeria. The hospital functions as a referral centre for numerous primary and secondary health facilities within and around the state. The dental department provides a comprehensive range of services, including restorative dentistry, oral surgery, prosthodontics, orthodontics, and preventive oral care. This facility is among the few in the region that remained partially operational during the COVID-19 lockdown, rendering it an appropriate site for this study.

Study Population

The study population comprised patients who sought dental care at the tertiary hospital during the COVID-19 pandemic period (March 2020–December 2021) and after the peak of the pandemic. Both male and female patients aged 18 years and above who provided consent were included in the study.

Sample Size and Sampling Technique

The calculated minimum sample size was 120. A pre-test was carried out on 15 participants who were not part of the respondents used in the work. A convenience sampling technique was utilised to select

participants as they visited the clinic during the study period. This sampling method is limited due to high bias.

Inclusion and Exclusion Criteria

Inclusion Criteria: - Adult patients aged 18 years and above- Patients who visited the dental clinic during or after the COVID-19 pandemic- Patients who consented to participate in the study Exclusion Criteria:- Patients below 18 years of age- Patients who were critically ill or unable to communicate- Patients who declined participation

Ethical Approval

The health research ethics committee considered approved the research work. Ethical approval was granted on the 6th of August, 2025 with ethical approval number ADM/E22/A/VOL. VH/IHST/M/2025/72

Data Collection Instruments

Data were gathered using a structured, interviewer-administered questionnaire. The questionnaire consisted of four sections: - Section A: Socio-demographic data (age, gender, occupation, education)- Section B: Dental visit history before, during, and after COVID-19- Section C: Barriers to dental care during the pandemic (e.g., lockdown, fear of infection, cost)- Section D: Perceptions of dental service delivery during COVID-19

Data Collection Procedure

Data collection was conducted over a span of four weeks. The researchers administered the questionnaire to eligible patients after obtaining informed consent. COVID-19 safety protocols, such as mask-wearing, hand hygiene, and physical distancing, were strictly adhered to throughout the process.

Method of Data Analysis

Data collected were coded and entered into the Statistical Package for Social Sciences (SPSS) version 25.0 for analysis. Descriptive statistics, including frequencies, percentages, and mean values, were employed to summarise the data.

Result

Socio-demographic data.

Table 1: socio-demographic background of the respondents.

Variable	Frequency	Percentage
Sex		
Male	54	45.00
Female	66	55.00
Total	120	100.0
Marital status		
Single	59	49.17
Married	48	40.00
Divorced	7	05.83
Widow	6	05.00

Total	120	100.0
Age		
18-25	48	40.00
26-35	36	30.00
36-45	18	15.00
46-55	12	10.00
Greater than or equal to 56	6	05.00
Total	120	100.0
Educational status		
No formal	7	05.83
Primary	3	02.50
Secondary	20	16.67
Tertiary	90	75.00
Total	120	100.0

The above table shows that 45% of the respondents are males, while 55% are females. 49.17% of the respondents are single, 40% are married, 5.83% are divorced, and 5% are widowed. 40% of the respondents are aged 18-25, 30% are aged 26-35, 15% are aged 36-45, 10% are aged 46-55, and 5% are aged 56 and above. 5.83% of the respondents have no formal education, 2.5% have primary education, 16.67% have secondary education, and 75% have tertiary education. 46.67% of the respondents are students, 21.67% are self-employed, 17.5% are civil servants, 4.16% work in the private sector, 5% are unemployed, and 5% are retired.

Table 2: Assessing the changes in the utilisation rate of dental services before, during and after the COVID-19 outbreak.

Variable	Frequency	Percentage
How often did you visit a dental clinic before the COVID-19 pandemic?		
Never	43	35.83
Rarely	30	25.00
Occasionally	24	20.00
Frequently	23	19.17
Total	120	100.0
How often did you visit a dental clinic during the COVID-19 pandemic?		
Never	64	53.33
Rarely	22	18.33
Occasionally	20	16.67
Frequently	14	11.67

Total	120	100.0
How often did you visit a dental clinic after the COVID-19 pandemic (in the current period)		
Never	45	37.50
Rarely	36	30.00
Occasionally	21	17.50
Frequently	18	15.00
Total	120	100.00

Dental service utilisation declined markedly during the COVID-19 pandemic, with the proportion of individuals who never visited a dental clinic increasing from 35.8% before the pandemic to 53.3% during the outbreak. In the post-pandemic period, utilisation showed recovery, as the proportion of non-users declined to 37.5%. However, dental service use did not fully return to pre-pandemic levels, indicating a lingering impact of COVID-19 on dental care-seeking behaviour

Table 3: Identify the barriers patients faced in accessing dental services during the COVID-19 pandemic

Variable	Frequency	Percentage
What were the main reasons you were unable to access dental services during the COVID-19 pandemic (indicating others and more than one reason)		
Fear of contracting COVID-19	35	29.17
Dental clinics were closed or had limited hours	13	10.83
Financial difficulties	11	09.17
Lack of transportation	7	05.83
Travel restrictions or lockdown measures	12	10.00
Lack of information about available services	20	16.66
Stress	2	01.67
More than one reason	20	16.67
Total	120	100.0

Table 3 shows that fear of contracting COVID-19 was the predominant barrier to accessing dental services during the pandemic (29.2%). This was followed by a lack of information about available services and the presence of multiple combined reasons, each accounting for 16.7% of responses. System-related factors such as dental clinic closures or reduced operating hours (10.8%) and travel restrictions or lockdown measures (10.0%) were also commonly reported. Financial difficulties (9.2%) and lack of transportation (5.8%) were less frequently cited, while stress was reported by only a small proportion of respondents (1.7%).

Table 4: Evaluating the impact of reduced dental services utilisation on oral health outcomes.

Variables	Frequency	percentage
Since the COVID-19 pandemic, have you experienced any changes in your oral health?		
Yes, my oral health has worsened	21	17.50
Yes, my oral health has improved	49	40.80
No, my oral health has remained the same	50	41.67
Total	120	100.0
If your oral health has worsened, what do you think was the main cause?		
Inability to visit a dentist	4	03.33
Delayed treatment	9	07.50
Increased stressor lifestyle changes	8	06.67
Not worsened	99	82.50
Total	120	100.0

Most respondents reported stable or improved oral health following the COVID-19 pandemic, with over four-fifths indicating no deterioration. Only a minority experienced worsening oral health. Among those affected negatively, delayed dental treatment emerged as the leading contributing factor, followed by stress-related or lifestyle changes, while inability to visit a dentist was the least reported cause. Overall, the findings indicate that although reduced dental service utilisation adversely affected some individuals, the majority maintained or improved their oral health, possibly reflecting increased personal oral health awareness during the pandemic

Table 5: Understanding patients' perception about the accessibility and quality of dental care post pandemic

Variables	Frequency	Percentage
How satisfied are you with the availability of dental services after the COVID-19 pandemic?		
Very satisfied	26	21.66
Satisfied	44	36.66
Neutral	36	30.00

Dissatisfied	11	09.17
Very dissatisfied	3	02.50
Total	120	100.0
Do you feel that dental services are now more accessible or less accessible compared to before the COVID-19 pandemic?		
More accessible	73	60.83
Less accessible	17	14.17
Same level of accessibility	30	25.00
Total	120	100.0

Table 5 shows that most respondents had a positive perception of dental care availability in the post-COVID-19 period. Overall, 58.3% of participants reported being satisfied or very satisfied with the availability of dental services, while 30.0% expressed a neutral view. Only a small proportion (11.7%) reported dissatisfaction. In terms of accessibility, a clear majority of respondents (60.8%) perceived dental services as more accessible after the pandemic, whereas fewer respondents felt accessibility was unchanged (25.0%) or reduced (14.2%). These findings indicate an overall improvement in both perceived availability and accessibility of dental services following the COVID-19 pandemic.

Discussion

This study showed clear differences in dental clinic attendance among respondents before, during, and after the COVID-19 pandemic. Before the pandemic, although some respondents reported occasional or regular dental visits, about one-third had never attended a dental clinic, reflecting ongoing low preventive oral-health-seeking behaviour among young adults, in line with previous Nigerian studies (Adeniyi et al., 2018) (4,1).

During the pandemic, clinic attendance declined sharply, with over half of respondents reporting no dental visits. This reduction aligns with global reports of disrupted dental services due to infection-control measures, lockdowns, and prioritisation of emergency-only care (1,6,5,10). Fear of contracting COVID-19 emerged as the primary barrier to accessing care, corroborating findings from other studies that highlighted psychological avoidance of healthcare facilities during the pandemic (5,10). Structural factors, including clinic closures, travel restrictions, and financial constraints, further compounded accessibility challenges (11,12).

Post-pandemic, attendance showed a gradual recovery, although utilisation has not yet returned to pre-pandemic levels. This improvement may reflect increased public confidence in infection-control measures, reopening of clinics, and enhanced health awareness, as noted in other reports of dental service adaptation (13). Nonetheless, a substantial proportion of the study population still do not engage in regular dental visits, underscoring the need for targeted oral health education and preventive initiatives (14).

Regarding oral health status, most respondents reported stable or improved outcomes after the pandemic, likely due to heightened awareness of personal hygiene and the adoption of preventive practices. However, a minority (17.5%) experienced deterioration, mainly due to delayed treatment, stress, and inability to

access dental care, highlighting the long-term consequences of service disruption, including progression of caries and periodontal conditions ⁽⁹⁾.

Satisfaction with dental services post-pandemic was generally positive, with over half of respondents expressing satisfaction and perceiving improved accessibility. This indicates successful adaptation and resilience of tertiary dental facilities such as the University of Benin Teaching Hospital, consistent with findings from studies that observed improvements in patient experience following service restructuring ^(15,16). However, a minority remained dissatisfied, suggesting that financial, psychological, and logistical barriers continue to impede equitable access.

Conclusion

The COVID-19 pandemic significantly disrupted dental service utilisation among the study population in South-South Nigeria, primarily due to fear of infection, service closures, and mobility restrictions. These disruptions negatively affected oral health for individuals who delayed or avoided treatment. Ensuring continuity of care, strengthening public trust, and integrating oral health services into emergency preparedness frameworks are essential to mitigate the impact of future public health crises.

Recommendations

1. **Public Awareness and Education:** Implement targeted campaigns to promote routine dental visits and reinforce safe access to dental services during emergencies.
2. **Enhanced Infection Control and Communication:** Maintain strict safety protocols and transparently communicate measures to reassure patients.
3. **Adoption of Tele-dentistry:** Expand remote consultations and triage systems as alternative care pathways during restricted access periods.
4. **Policy and Preparedness Integration:** Incorporate oral health into national and regional emergency health strategies to ensure continuity of care.
5. **Financial and Access Support:** Introduce subsidised care, mobile clinics, or transport assistance to reduce barriers for vulnerable populations.

Limitations And Suggestions For Future Research

While providing valuable insights, this study has several limitations. It was conducted in a single tertiary dental facility, limiting generalizability. Reliance on self-reported data may introduce recall bias, and the cross-sectional design precludes causal inference. Future research should adopt multi-centre and longitudinal designs, include diverse demographic groups, and consider additional determinants of oral health. Such studies will provide a more comprehensive understanding of dental service utilisation trends and inform policy to strengthen oral healthcare resilience during public health emergencies.

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