Convergent Parallel Mixed-Methods Study of Oral Health Service Affordability, Accessibility, and Innovative Delivery Among Urban Traders in Ikeja, Lagos

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ABSTRACT

Background

Urban informal sector workers face unique barriers to preventive healthcare; however, little is known about their oral health behaviors in rapidly growing market economies. This study examined the patterns, determinants, and perceived facilitators of dental service utilization among traders in an urban marketplace.

Methods

A convergent parallel mixed-methods design was conducted among 123 traders and businessmen in Ikeja, Lagos State. The quantitative component collected demographic, occupational, and behavioral information, along with self-reported oral health status, service utilization, and perceived barriers. Associations between occupational demands, symptom frequency, and care-seeking behaviors were examined using chi-square tests, while binary logistic regression explored predictors of non-utilization of dental services. The qualitative component consisted of open-ended responses, which were thematically analyzed to capture commonly expressed views and recommendations on accessibility, affordability, and service delivery.

Results

Among the participants (n=123), most were aged 30–39 years (45.5%), with a balanced gender distribution and predominant engagement in gadget and equipment sales (61.8%). Although 66.7% recognized dental check-ups as important, a large majority (83.7%) had not seen a dentist in the past year. The main reasons were absence of perceived dental problems (54.4%), work-related time constraints (22.3%), and cost (15.5%). The most reported access challenges were cost of care (34.5%) and long wait times (26.8%). Symptom frequency was significantly associated with dental visits (p=0.021) and treatment delays (p=0.002). Qualitative data revealed three main intervention priorities: financial accessibility (e.g., subsidized/free services, HMO inclusion); targeted outreach and education (e.g., quarterly market-based programs, workplace health promotion); and service innovations aligned with traders' schedules (e.g., mobile clinics, extended/24-hour services). Mobile dental clinics (33.2%) and extended clinic hours (56.9%) were the most favored solutions, with 70.7% of participants willing to participate in on-site outreach near their business premises.

Conclusion

Despite awareness of the value of preventive dental care, utilization remains low among traders due to cost, time constraints, and symptom-driven care-seeking behavior. Interventions should integrate occupationally compatible service models, financial subsidies, and targeted outreach to bridge the knowledge–action gap in this population. Policy efforts addressing both perceptual and structural barriers may substantially improve preventive oral health care uptake in urban informal economies.

Keywords: Access, Dental Care Utilization, Health Services Accessibility, Informal Sector Workers, Oral Health.

INTRODUCTION

Oral diseases, including dental caries, periodontal disease, and tooth loss, are the most common health problems and rank among the most prevalent non- communicable diseases worldwide. According to the World Health Organization (WHO), about 3.5 billion people globally—nearly half of the world's population—are affected by oral health issues such as tooth decay, gum disease, tooth loss, and oral cancers.[1–3] These conditions disproportionately

impact populations in low- and middle-income countries (LMICs), especially in sub-Saharan Africa.[4,5] Over the past decade, oral diseases have affected more than 480 million people (around 44% of the population) in sub-Saharan Africa, showing a significant increase over the last thirty years. This rise is mainly due to structural factors such as financial difficulties, weak oral health policies, limited infrastructure, and low awareness among healthcare providers. Together, these factors hinder equitable access to oral healthcare.[6,7] In Nigeria, despite overall healthcare improvements, oral health indicators remain poor.[8] The capacity of oral health services is further constrained by a shortage of dental professionals, uneven geographic distribution, and reliance on out-of-pocket payments.[9,10] Given these challenges, Nigeria continues to experience low utilization of dental services.

Dental service utilization in Nigeria remains very low, despite the high rate of oral health problems. Studies consistently show that fewer than 30% of Nigerians regularly visit a dentist, and most visits are driven by symptoms rather than preventive care.[10–12] For example, a study by Adeniyi and Oyapero[10] found that only 39.2% of respondents had ever seen a dentist, and over 70% only sought care when experiencing pain or acute symptoms. Similarly, in southeastern Nigeria, research has shown a high rate of untreated dental caries (97%) and significant urban–rural gaps in dental service use, with rural areas showing only 15.5% utilization compared to 65.4% in cities.[11] The use of preventive services like regular scaling and polishing is especially low among those from lower socioeconomic backgrounds and rural communities.[12] Multiple structural and psychosocial barriers lead to the underuse of dental services in Nigeria, including financial difficulties, poor oral health literacy, limited availability of dental clinics, and cultural beliefs that discourage routine check-ups. A cross-sectional study by Ajayi et al.[13] identified cost and the perception that dental care is only needed when in pain as major reasons for avoiding dental visits among Nigerians. Furthermore, research by Folorunsho et al.[14] showed that rural residents and those with lower socioeconomic status are more severely affected by limited access, due to both geographic and informational barriers. These findings highlight the urgent need for targeted, equity-focused interventions that address both financial and informational barriers while expanding geographically accessible and culturally appropriate dental services to underserved populations.

Informal sector workers, especially market traders and small business owners in Nigeria's urban centers, may face additional occupation-specific barriers to accessing dental care. These individuals typically work long, irregular hours and have limited flexibility to attend clinics during traditional operating hours, often prioritizing their daily income over their personal health needs.[15] Furthermore, the lack of employer-based health insurance and limited awareness of preventive oral health services add to this vulnerability.[16] Informal work environments are often transient, and structured occupational health systems are lacking. As a result, dental issues are frequently neglected until they become serious.[17] Traders and small-scale entrepreneurs often operate in environments where oral health is deprioritized due to competing socioeconomic demands; however, they constitute a significant and economically vital segment of the urban population. Despite their importance to city economies, this group remains underrepresented in oral health research and is largely excluded from mainstream healthcare planning. To address this service gap, it is crucial to understand the systemic limitations of Nigeria's urban dental infrastructure and the lived experiences and behavioral patterns of those most affected. Recognizing the need for tailored, community-responsive solutions, this study situates itself at the intersection of occupational health equity and public oral health, aiming to uncover actionable insights from populations facing the greatest access barriers.

To address disparities effectively, it is crucial to systematically measure gaps in dental service utilization, identify the factors driving these disparities, and monitor their evolution over time. Therefore, there is a need to determine the oral health-seeking behaviors and barriers to dental care among busy Nigerian traders and small business owners, an underserved group with unique occupational constraints. The importance of this research lies in its potential to inform equity-focused oral health policies in Nigeria, contribute to the redesign of urban dental services, and support the development of scalable, context-sensitive strategies that promote preventive oral health behaviors among hard-to-reach, economically active populations.

This study aims to determine the oral health-seeking behaviors and barriers to dental care among Nigerian traders and small business owners.

METHODS

Study Design

This research employed a convergent parallel mixed-methods design. A convergent parallel mixed-methods design was chosen to capture both the measurable patterns of oral health behaviors and the nuanced perspectives of traders. Quantitative data identified associations between occupational

demands, pain experience, and service use, while the qualitative component provided context, authenticity, and practical recommendations from the participants. The integration of these strands offers a more holistic understanding of the key drivers of poor access to oral health care in Lagos. This approach ensures that the study's findings are both empirically robust and grounded in lived realities. A quantitative approach was employed to assess the prevalence and predictors of dental service utilization, as well as its associated barriers. A concurrent qualitative approach, using open-ended questions, was integrated to explore participants' perspectives and proposed solutions in depth. The integration of these methods aimed to provide a comprehensive understanding of both the statistical patterns and the underlying reasons behind them. A sample of 123 participants was recruited among Nigerian traders and small business owners in two major commercial markets in Lagos state, namely Computer Village and Ipodo Markets. Lagos State has the highest nominal Gross Domestic Product in Nigeria, estimated at USD 102 billion.[18]

Study Setting

The study was conducted in two major commercial markets in Lagos State, an urban metropolis in southwestern Nigeria. These markets are densely populated with individuals engaged in informal and semi-formal economic activities, typically operating long hours with minimal flexibility to seek routine healthcare. Selected markets were chosen for their high trader density and structural diversity of business niches (e.g., electronics, textiles, and retail traders).

Study Population

The target population comprised male and female traders and small-scale business operators aged 18 years and above who were actively running businesses within the market either as owner or employee. Inclusion criteria were having at least 6 months of trading experience in the selected markets, ability to communicate in English, Yoruba, or Pidgin English, and willingness to provide informed consent. Individuals with acute health conditions or cognitive impairment that limited their ability to participate in surveys were excluded.

Sample Size Determination & Sampling Technique

Sample size was calculated using Cochran's formula for descriptive studies: $n=Z^2P(1-P)/d^2$, using a prevalence estimate (p=0.058) taken from a previous Nigerian study on dental service use among market traders, a group similar to ours.[19] Using this context-specific value follows Cochran's advice to use the best available data. Because preventive dental visits are generally low in similar groups, this figure is both epidemiologically reasonable and practically suitable. To improve accuracy, the sample size was rounded up and increased by 20% to compensate for incomplete responses, hence a total of 123 participants were recruited. The calculated sample size was considered adequate to detect meaningful associations in the logistic regression models. A multi-stage sampling technique was employed. Two large commercial markets were randomly selected from the official market registry of the Lagos State Ministry of Commerce, Industry and Cooperatives. These represented different trading hubs within the city. A systematic random sampling of traders: every 3rd stall was approached along major walkways during business hours. An eligible respondent was selected per stall, by simple random selection (ballot method) to determine which shop to choose based on shop number. Eligible respondents were male and female traders and small-scale business operators aged 18 years and above, actively running businesses within the market.

Data Collection Instrument

A semi-structured questionnaire was drafted, piloted, and refined before the fieldwork. The 36-item questionnaire was adapted from a previously validated questionnaire.[10] The questionnaire underwent rigorous pre-testing to ensure face and content validity. Two subject-matter specialists in dental public health reviewed the instrument, evaluating its clarity, appropriateness, and alignment with the study objectives. Items deemed unclear or lacking validity were removed. The final English version was translated into Yoruba using a forward–backward translation process carried out independently by two bilingual professionals proficient in both languages. To further assess clarity, reliability, and cultural appropriateness, a pilot study was conducted with 15 traders in a comparable market outside the study site. The tool demonstrated high internal consistency, with a Cronbach's alpha of 0.92. The questionnaire comprised five sections: (1) sociodemographic and occupational details (age, sex, type of business, and typical working hours); (2) awareness and attitudes toward oral health and dental services; (3) patterns of dental service use and perceived barriers to access; (4) the influence of occupational schedules on oral health–seeking behaviors; and (5) open-ended items soliciting participants' proposed solutions and recommendations. The instrument was interviewer-administered by trained researchers. Responses were anonymized using unique four-digit codes to protect participant identity.

Variables

Variables gathered included explanatory variables

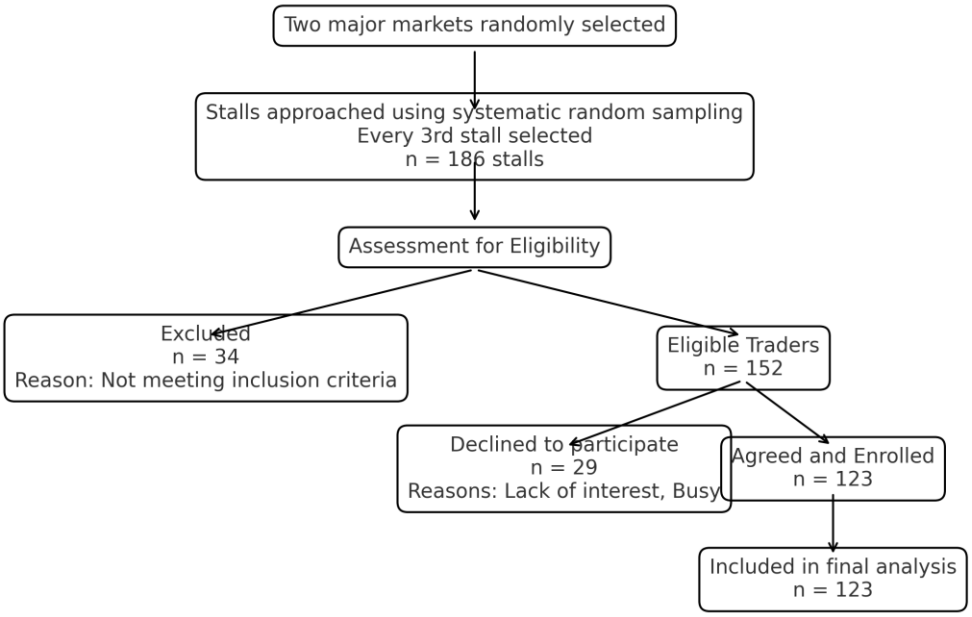
like demographics, business niche, and work duration (in hours). The main outcome variables were dental service utilization and its barriers/challenges and participants' perception of the importance of dental visits. Responses ranged from dichotomous to open ended. The variables for the logistic regression model (age, sex, business type, work duration, symptom experience, and treatment delay) were selected a priori based on their theoretical and empirical relevance to healthcare access. No sensitivity or subgroup analyses were conducted, as these were not part of the study objectives.

Data Management, Analysis & Bias Control

Trained research assistants, fluent in English, Pidgin English, and Yoruba, administered the questionnaires through face-to-face interviews during non-peak business hours to minimize disruption. Data collection occurred over two weeks, with each session lasting 15–20 minutes per participant. For open-ended questions, responses were recorded verbatim. The randomized sampling technique minimized selection bias, while the interpretation of the questionnaire into the local language minimized language barriers. The high internal consistency of the research tool (Cronbach's alpha of 0.92) during piloting is a critical strength of this study, which improved validity. Quantitative data were extracted in Microsoft Excel, entered, and analyzed using IBM SPSS Version 26. Results were presented using tables, charts, and narrative summaries. Descriptive statistics (frequencies, percentages, means, and standard deviations) were computed. Chi-square tests were used to assess associations between variables (e.g., working hours vs. service utilization), and the statistical significance level was set as α=0.05 with two-sided tests. Open-ended responses were analyzed using Braun and Clarke's thematic analysis approach. The data were first read repeatedly to achieve familiarization, after which they were manually coded to capture meaningful concepts and patterns. Codes were then collated into broader categories and refined into themes that represented commonly expressed views and recommendations. Representative quotations were selected to illustrate each theme, and attention was given to both convergent and divergent perspectives. The resulting themes were interpreted in relation to the study objectives.

Handling of Missing Data: The analysis was conducted on complete cases; there were no missing data for the variables used in the regression model.

STROBE FLOWCHART OF PARTICIPANTS



RESULTS

Most participants were aged between 30 and 39 years (45.5%), followed by the 18–29 age group (32.5%), indicating a relatively young to middle-aged working population. The gender distribution was fairly balanced but slightly skewed toward females (52.8%). The main business sector was computer hardware and mobile phone sales (61.8%), highlighting a technology-focused urban marketplace. A significant portion (44.7%) reported working 6–8 hours daily, with some also working longer hours (13.0% reported >12 hours). These details offer important context for understanding barriers to and patterns of healthcare use, especially related to time constraints and job responsibilities. (Table 1)

Table 1. Sociodemographic Characteristics of Participants (n = 123)

Variables	Frequency (n=123)	Percentages (%)
Age Range		
18-29 years	40	32.5
30-39 years	56	45.5
40-49 years	22	17.9
≥50	5	4.1
Gender		
Female	65	52.8
Male	58	47.2
Business niche		
Gadget and equipment sales	76	61.8
Food and Beverage sales	10	8.1
Small-scale manufacturing/Production	5	4.1
Logistics provision	6	4.9
Wholesale/Retail trade	26	21.1
Work duration (hours)		
<6 hours	11	8.9
6-8 hours	55	44.7
9-12 hours	41	33.3
>12 hours	16	13.0

While 66.7% recognized dental check-ups as important to some extent (66.7% important/very important), a large majority (83.7%) had not seen a dentist in the past year. This gap between knowledge and action suggests possible systemic and behavioral barriers, such as work demands, financial costs, or lack of motivation, without symptoms. These results highlight the need for targeted awareness campaigns that not only educate but also promote behavioral change among working populations. The most common reason given for not visiting was the absence of perceived dental issues (54.4%), indicating a symptom-driven approach to oral health. Work-related time constraints (22.3%) and high costs (15.5%) were also key barriers. When asked about access challenges, participants most often mentioned the cost of care (34.5%), followed by long wait times (26.8%) and lack of awareness (16.1%). These findings suggest that both perceptual factors (perceived need) and logistical issues (cost and time) significantly limit access to preventive dental services. Table 2 explores the perceived value of routine dental care and participants' actual usage behaviors.

Table 2: Awareness, attitudes and barriers toward accessing dental care among participants.

Variables	Frequency (n=123)	Percentages (%)
Importance of regular dental checkups		
Important/ Very Important	82	66.7
Slightly Important	8	6.5
Neutral	24	19.5
Not important	9	7.3
Visited a dentist in the past 12 months		
No	103	83.7
Yes	20	16.3
Main reasons for not visiting a dentist in the last 12 months		
Fear or anxiety about dental treatment	8	7.77
High cost of dental care	16	15.53
Lack of time due to work	23	22.33
No noticeable dental problems	56	54.37
Main challenges in accessing dental services		
Limited clinic operational hours	19	11.3
Long waiting time	45	26.8
Distance to nearest dental facility	19	11.3
Cost of dental care	58	34.5
Lack of awareness about dental services	27	16.1
Challenges		

Nearly half of the respondents (46.3%) reported never experiencing dental pain or discomfort, 33.3% experienced occasional pain (1–2 times/year), and 13.0% reported frequent pain. Despite this, 35.8% of the participants admitted to delaying treatment due to work schedules, highlighting the tangible impact of occupational rigidity on health behavior. These findings underscore the need for work-compatible dental care models, such as mobile clinics, extended hours, or employer-integrated dental health initiatives. Table 3 displays the effects of occupational demands on the frequency and prioritization of dental visits among traders and businessmen.

Table 3: The effect of occupational demands on the frequency and prioritization of dental visits among traders and businessmen

Questions	Frequency (n=123)	Percentages (%)
How often do you experience dental pain or discomfort?		
Chronic or ongoing pain	9	7.3
Frequently (More than 3 times a year)	16	13.0
Never	57	46.3
Occasionally (1-2 times a year)	41	33.3
Have you ever delayed dental treatment due to your work schedule?		
No	79	64.2
Yes, frequently	22	17.9
Yes, occasionally	22	17.9

Although individuals working 6–8 hours daily accounted for the highest proportion of dental visits (50.0% among those who visited a dentist), the association was not statistically significant (p=0.946). Similarly, delays in seeking care were most common among those working 6–8 hours (54.5%), but the difference was not statistically significant (p=0.086). These results suggest that although work hours may influence care patterns, they are not the sole determinants. Multifactorial analyses, including financial, perceptual, and logistic variables, may offer deeper insights. Table 4 presents the association between self-reported working hours and two key oral health behaviors: recent dental visits and delayed treatment.

Table 4. Association Between Work Duration and Oral Health-Seeking Behavior

Disease group	Hours of work					
	6-8hrs (%)	9-12hrs (%)	<6hrs (%)	>12hrs (%)		P-value
Visited the dentist in the last 12 months						
Yes	10 (50.0)	6 (30.0)	2 (10.0)	2 (10.0)	0.513	0.946
No	45 (43.7)	35 (34.0)	9 (8.7)	14 (13.6)		
Delayed dental treatment due to work						
Yes	24 (54.5)	11 (25.0)	6 (13.6)	3 (6.8)	6.476	0.086
No	31 (39.2)	30 (38.0)	5 (6.3)	13 (16.5)		
Fisher's exact test						

A statistically significant relationship was observed between symptom frequency and dental visits (p=0.021) and treatment delay (p=0.002). Participants who experienced occasional discomfort (1–2 times/year) were the most likely to have visited a dentist (40%). They were also among the most likely to delay treatment (47.7%). Those with chronic or frequent pain were less represented in the group that accessed care, suggesting that symptom intensity alone does not predict healthcare utilization. These findings imply a nuanced relationship between symptom awareness, urgency perception, and practical access barriers. Table 5 displays the association between the presence and frequency of dental symptoms and seeking or delaying care.

Table 5. Association Between Symptom Frequency and Oral Health-Seeking Behavior

Oral Health Behaviour	Presence of pain and discomfort					
	Chronic pain (%)	Frequently (>3 times a year) (%)	Never (%)	Occasionally (1-2 times a year) (%)		P-value
Visited the dentist in the last 12 months						
Yes	3 (15.0)	5 (25.0)	4 (20.0)	8 (40.0)	8.954	0.021*
No	6 (5.8)	11 (10.7)	53 (51.5)	33 (32.0)		
Delayed dental treatment due to work						
Yes	3 (6.8)	9 (20.5)	11 (25.0)	21 (47.7)	14.146	0.002*
No	6 (7.6)	7 (8.9)	46 (58.2)	20 (25.3)		
Fisher's exact test						

The high cost of care was the most prevalent barrier (34.5%), followed by long waiting times (26.8%), limited clinic hours (11.3%), and poor geographic accessibility (11.3%). Notably, 16.1% of the respondents indicated a lack of awareness of the available services. These findings indicate that enhancing awareness alone is insufficient unless it is paired with structural reforms, such as cost reduction and service decentralization. The data advocate for policy-level interventions targeting both the economic and service delivery dimensions of access. Table 6 presents the responses to multiple-choice items regarding practical barriers to accessing dental services.

Table 6. Structural and Informational Challenges to Accessing Dental Care

Variables	Frequency (n=123)	Percentages (%)
Challenges*		
Limited clinic operational hours	19	11.3
Long waiting time	45	26.8
Distance to nearest dental facility	19	11.3
Cost of dental care	58	34.5
Lack of awareness about dental services	27	16.1
Multiple response*		

*Multiple responses were permitted. As a result, the number of recorded responses (n=168) exceeds the total number of participants (n=123)

Mobile dental clinics (33.2%) and subsidized dental treatment (29.3%) were the most favored interventions. A majority (56.9%) expressed that extended clinic hours would significantly improve access, while 70.7% were willing to participate in dental outreach programs if they were conducted near their business premises. Awareness of existing programs was low (12.2%), suggesting an outreach gap in the study. These preferences reveal a strong demand for innovative, community-integrated, and financially accessible models of dental service delivery, especially those tailored to the unique schedules of traders and small-scale entrepreneurs. Table 7 displays the participants' suggested solutions and perceived facilitators for improving access to oral healthcare.

Table 7. Suggested Solutions for Enhancing Dental Care Accessibility

Variables	Frequency (n=123)	Percentages (%)
General Solutions*		
Mobile dental clinics	61	33.2
Onsite dental screening	35	19.0
Flexible appointment	34	18.5
Subsidized dental care	54	29.3
Would extended clinic hours improve access to dental care?		
No	18	14.6
Unsure	35	28.5
Yes	70	56.9
Are you aware of any dental outreach programs or campaigns specifically targeting traders or businesspeople in your area?		
No	108	87.8
Yes	15	12.2
Would you participate in dental awareness programs if they were organized in your area of business?		
No	15	12.2
Unsure	21	17.1
Yes	87	70.7

*Multiple responses were permitted. As a result, the number of recorded responses (n=168) is greater than the total number of participants (n=123)

A binary logistic regression method was utilized with the outcome variable being non-utilization of dental services, predicted by age, sex, business type, work duration, and symptom experience. Respondents who had never experienced dental pain or discomfort were significantly more likely not to access dental care (OR = 4.598, 95% CI: 1.230–17.196, p = 0.023). Although not statistically significant, higher odds of not accessing dental care were observed among females (OR = 1.859), traders working 9–12 hours (OR = 1.451), <6 hours (OR = 1.433), and >12 hours (OR = 1.148). Similarly, older age groups (30–39, 40–49, and ≥50 years) showed slightly elevated odds compared to the reference, although none reached significance. In Table 8, the results of the Binary logistic regression analysis to identify predictors of non-access to oral health care among urban traders and small-scale entrepreneurs is displayed.

Table 8: Binary Logistic Regression Analysis of Predictors of Not Accessing Oral Health Care Among Urban Traders and Small-Scale Entrepreneurs

Predictor variables	p-value	OR	CI (lower)	CI (upper)
Age Range				
18-29 years	Ref			
30-39 years	0.909	1.076	0.306	3.781
40-49 years	0.995	1.006	0.177	5.722
≥50	0.999	0.972	0.102	2.436
Sex	Ref: Male			
Female	0.305	1.859	0.569	6.073
Business Niche/Type				
Gadget and equipment sales	Ref			
Food and Beverage services	0.862	0.850	0.136	5.301
Manufacturing/Production	0.188	0.166	0.011	2.402
Transportation/Logistics	0.667	0.562	0.041	7.732
Wholesale/Retail trade	0.792	0.840	0.230	3.062
Work duration (hours)				
6-8 hours	Ref			
9-12 hours	0.553	1.451	0.424	4.963
<6 hours	0.742	1.433	0.169	12.176
>12 hours	0.885	1.148	0.178	7.383
Never felt dental pain/discomfort	Ref: No			
Yes	**0.023**	4.598	1.230	17.196
Delayed dental appointment due to work	Ref: Yes			
No	0.374	0.594	0.188	1.874

OR- Odds ratio, CI- Confidence interval

OPEN-QUALITATIVE RESULTS

Accessibility and Cost Reduction (n = 26)

Cost-related constraints emerged as the most significant barrier to dental care utilization, consistent with the quantitative finding that cost was one of the most frequently cited deterrents (34.5%, Table 6). Twenty-six participants explicitly recommended measures to reduce treatment expenses, including subsidized dental services (n = 7), free dental care or periodic checkups (n = 3), and affordable pricing models (n = 16), such as lower consultation fees and the integration of dental care into health insurance schemes. As one trader noted: "Even in government hospitals, the charges are too high; if they can include dental in HMO, more of us will go." Another highlighted the dual burden of cost and opportunity loss: "We lose money when we leave our shop, so if treatment can be cheaper and faster, it will help us." These qualitative insights reinforce the quantitative association between occupational inflexibility and poor-service uptake.

Awareness, Education, and Outreach (n = 20)

The second unifying theme was the persistent gap between knowledge and proactive health-seeking behavior. Twenty participants underscored the need for greater awareness, citing market-based dental outreach (n = 4), distribution of flyers (n = 2), and oral health publicity through the radio and other media (n = 3). Four traders specifically suggested regular workplace visits: "If dentists come here once in a while to check us, it will remind us to go for treatment." Others emphasized the visibility of health promotion: "Many of us don't know the danger until it is too late. They should put more adverts on radio and posters in the market." These responses echo the survey finding that lack of perceived need was a common reason for non-utilization, indicating that awareness deficits remain a key driver of poor access to care.

Service Delivery and Infrastructure Expansion (n = 16)

The third theme highlights service delivery innovations tailored to the realities of informal sector workers. Sixteen respondents recommended mobile dental clinics (n = 5), home-based services (n = 3), flexible appointment systems (n = 4), and extended operating hours, including weekends or 24-hour services (n = 3). For instance, one participant stated: "If there is a mobile dental bus in the market, we will use it, because we cannot close our shop to go far." Similarly, the location of facilities was raised: "The Government should put a dental clinic close to the market, like they do with primary health centers." These findings are particularly relevant, suggesting that spatial access plays a contextual role in care-seeking.

Integration with Quantitative Results

Taken together, these themes provide explanatory depth to the quantitative results of the study. While regression analysis revealed that the absence of pain strongly predicted non-utilization, the qualitative findings showed that even those who experienced discomfort avoided care due to financial, structural, and awareness barriers. Thus, the mixed-method approach highlights that poor access is not solely pain-driven but is reinforced by cost, occupational constraints, and weak service delivery innovations.

DISCUSSION

Findings: This study examined perceptions of oral health, barriers to accessing care, and preferences for dental service delivery among traders and small-scale entrepreneurs in an urban Nigerian market setting. The results reveal a complex interplay between occupational demands, structural barriers, and behavioral attitudes, all of which contribute to the underutilization of dental services in this high-risk yet often overlooked population. Notably, the respondents were mainly young to middle-aged, economically active individuals involved in fast-paced business sectors. This group is usually excluded from formal employer-sponsored healthcare systems,[16] and faces significant opportunity costs when seeking conventional health services, especially those that require time away from business operations. Previous research shows that this reactive approach to oral healthcare is often shaped by factors such as fear of dental procedures, cost, and lack of awareness about the importance of regular dental check-ups.[10-12] In these settings, cost and perceived lack of need consistently act as barriers, reinforcing a symptom-triggered model of dental care.

One of the most notable findings was the gap between awareness of the importance of routine dental care and its actual use. The use of professional dental services is markedly lower than in many Western countries, where 40–80% of adults typically have an annual dental visit.[23] This persistent gap between knowledge and practice aligns with patterns reported in Nigeria, Ivory Coast, South Africa, and sub-Saharan Africa.[20-22] Despite the widespread recognition of the importance of dental check-ups, most respondents had not visited a dentist in the past year, with self-medication emerging as a common alternative. This is also in agreement with a systematic review and meta-analysis of 103 studies involving over 7.3 million participants from 28 countries, which found that just over half of people worldwide—about 54%—reported using dental services regularly or on a preventive basis. This tendency was markedly greater in nations with higher Human Development Index scores, where routine dental visits were more common.[23] This symptom-driven approach to oral health is problematic because it leads to delayed care-seeking, allowing minor issues to develop into more severe and costly problems.

The reasons cited for non-utilization in this study reinforce the duality of barriers: perceptual and structural. Many participants did not perceive a need for dental care unless they experienced pain or visible dental issues. Logistical barriers such as time, cost, and service accessibility further delay care. These findings align with prior studies in Nigeria, where time spent at health facilities, high out-of-pocket expenses, and geographic distance from clinics were major deterrents to care.[10-12] Furthermore, this study adds some distinctions by highlighting how occupational inflexibility, common among self-employed workers, poses a significant barrier often overlooked in oral health policy

discourse. Existing oral health policies may fail to adequately address the needs of self-employed individuals. One reason is that they often overlook how rigid work schedules limit workers' ability to access prompt dental care. Regression analysis also highlighted that the absence of dental pain was a significant predictor of non-utilization of oral health services, underscoring the dominant role of symptom-driven care in this population. Interestingly, symptom intensity did not necessarily predict care-seeking behavior. Even respondents with frequent or chronic discomfort seldom visited a dentist.

This aligns with the behavioral health literature, which shows that individuals in resource-constrained settings may normalize chronic symptoms or deprioritize care due to limited access, perceived cost, or entrenched self-management practices.[24,25] Conversely, those who reported mild or occasional discomfort were somewhat more likely to seek dental care, though they often delayed treatment, reflecting the ambivalence created by competing work demands and limited service flexibility. Although not statistically significant, higher odds of non-access were also observed among females, older age groups, and traders with shorter or longer work hours, suggesting that sex and occupational demands may further exacerbate the barriers to preventive care. Collectively, these findings emphasize the need for interventions that shift care-seeking behavior from a reactive, pain-driven model to proactive and preventive utilization of dental services.

Despite these barriers, the participants provided clear and consistent recommendations for improving access to dental health services. Suggestions clustered around three major themes: reducing the financial burden, increasing awareness, and expanding the service delivery options. While these preferences highlight a strong desire for community-integrated care models, such as mobile clinics and market-based outreach, their large-scale implementation may be constrained by funding gaps, workforce shortages, and limited integration into existing service frameworks. Nonetheless, existing NGO outreach programs, donor-supported mobile health initiatives, and provisions of the Nigerian National Oral Health Policy offer important opportunities to pilot cost-effective models. Leveraging these resources could allow gradual scaling, ensure sustainability, and embed innovations within already established health delivery systems in Nigeria. These findings are also consistent with previous findings from outreach programs in Nigeria, where mobile dental services not only improved access but also reduced the cost per patient and increased participation.[26] There was strong demand for extended clinic hours, weekend services, and flexible scheduling. This highlights the need to reimagine oral health care delivery for informal workers. While such options may already exist in private clinics, their higher costs often make them inaccessible to this population, underscoring the importance of adapting similar flexibility within public facilities to ensure equitable access to care.

Implications: These findings underscore the consequences of a symptom-driven approach to oral health, which leads to delayed care-seeking, disease progression, and higher treatment costs. The normalization of chronic oral health issues reflects behavioral adaptation in resource-constrained settings and highlights missed opportunities for preventive interventions. Furthermore, the evidence that respondents desire community-based, flexible, and affordable service delivery models suggests that the demand for care exists, but current systems are poorly aligned with the realities of informal workers. This has broad implications for oral health policy: financial subsidies, expanded insurance coverage, and innovative delivery mechanisms, such as mobile clinics and outreach programs, are essential. Aligning oral health care with occupational realities may reduce lost productivity and help frame preventive care not as a luxury but as an enabler of sustained economic activity.

Trade-Offs (Limitations): This study had some limitations that must be acknowledged. First, the study population was restricted to urban traders in Nigeria, which may limit the generalizability of the findings to rural settings or other occupational groups. Second, as data collection relied on self-reporting, recall and social desirability biases may have influenced responses, particularly in relation to health-seeking behaviors such as self-medication. Third, although logistic regression was adjusted for key variables, potential but unmeasured confounders, such as education, income, and health insurance status, may have influenced oral health-seeking behavior. Additionally, the possibility of non-response bias cannot be excluded, as individuals who declined participation may systematically differ from respondents. Fourth, the cross-sectional design precludes causal inferences between perceived barriers and the actual service utilization. The study had an adequate sample for inferential statistics. However, it was not specifically powered for multivariable analyses, and regression findings should be interpreted with some caution. Finally, occupational inflexibility was inferred from reported opportunity costs and would benefit from triangulation with direct workplace observations. To minimize these limitations, this study employed standardized data collection procedures, assured participants of confidentiality to reduce reporting

bias, and applied robust analytical methods to strengthen the validity of the findings.

Take-Home (Conclusion): This study provides a contextually grounded understanding of the barriers to and facilitators of dental care access among urban traders and small-scale businesses in Nigeria. While awareness of oral health importance is relatively high, utilization remains low, driven by a combination of occupational inflexibility, financial limitations, and systemic service delivery gaps. Traders and entrepreneurs whose livelihoods depend on continuous daily operation face significant opportunity costs in seeking preventive healthcare within conventional models. Although not directly explored, tele-dentistry offers a potential solution for traders who cannot leave their markets for long periods. It could support education, triage, and follow-up care, although challenges such as Internet access and integration into existing services must be addressed. Importantly, the study highlights that perceived need is symptom-dependent and that service access is strongly influenced by convenience, affordability, and awareness.

Expectations for Future Research: Future research should build on these findings by examining variations across different regions and occupations to better understand how contextual factors, such as rurality, income, and healthcare infrastructure, shape oral health behaviors. Longitudinal studies are particularly valuable for capturing how occupational demands influence oral health trajectories over time. Additionally, interventional studies that test the impact of flexible service models (e.g., weekend clinics, mobile dentistry, market-based outreach) are needed to generate evidence on scalable, context-sensitive approaches.

Recommendations: Based on these findings, several actionable recommendations have emerged. First, policy reforms should integrate dental care into existing health insurance schemes at the state or national level to reduce out-of-pocket expenses. Second, pilot mobile dental clinics and evening/weekend services in markets, organized in partnership with HMOs, could provide micro-health insurance for market women and encourage preventive care rather than waiting for pain. While these innovations present promising strategies, their sustainability depends on viable funding. Potential opportunities include public–private partnerships with HMOs and telecommunications companies, integration into existing state and national oral health programs, and leveraging NGO or donor-funded community health initiatives. Microinsurance schemes tailored to informal workers and corporate social responsibility investments from industries linked to markets could also provide scalable pathways. Embedding such pilots within the Nigerian National Oral Health Policy framework would enhance coordination, accountability, and financial feasibility. Future research should evaluate these interventions' effects on utilization, oral health outcomes, and cost-effectiveness, expand studies to other regions and informal worker groups, and investigate cultural and perceptual barriers through in-depth qualitative methods. Third, behavioral interventions, including culturally tailored awareness campaigns, should emphasize that preventive dental visits are linked to productivity and long-term well-being. Finally, policymakers and stakeholders must ensure that informal sector workers, who represent a substantial portion of the workforce, are included in the oral health planning, resource allocation, and program implementation.

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Conflicts of Interest

The authors declare that they have no competing financial or nonfinancial interests that could have influenced this work.

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