

Pattern of dental services utilization among adolescents and adults in Kano, Northern Nigeria

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Abstract

Nigeria is often conveniently described along geographical lines as North and South, each with its peculiar culture, predominant religion, and distinctive determinants of health. Available oral health information for Nigeria is derived from studies that have mainly been conducted in southern Nigeria. This study describes oral care-seeking behavior in northern Nigeria by analyzing the

attendance pattern at a tertiary hospital over a period. Clinic records of patients who visited the Oral Diagnostic Sciences (ODS) clinic in Aminu Kano Teaching Hospital, Kano, were retrieved and retrospectively reviewed. Data on age, sex, ethnicity, and chief dental complaints were extracted and analyzed using SPSS version 20 (IBM Corp.; Armonk, NY, USA). The clinic records of 1,620 patients were reviewed, and the results showed that more males than females visited the clinic (55.4%), and dental pain was the most common reason for visiting the clinic (57.1%). Young adults and youths comprised the majority of patients, while the elderly population was the least represented. The study reveals dental healthcare utilization patterns in Kano, Nigeria, with sex differences reflecting sociocultural factors influencing health behaviors. The high proportion of dental pain cases highlights the need for preventive oral health efforts. The association between young/middle-aged individuals and dental trauma highlights occupational hazards and lifestyle as key determinants of dental health outcomes.

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Introduction

Dental health constitutes a crucial aspect of overall well-being that often receives inadequate attention from individuals and policymakers compared to other healthcare domains.¹ This issue is pervasive in Nigeria, as well as in many developing nations, where oral health services encounter various obstacles, including insufficient infrastructure, limited resources, and low levels of oral health literacy. Consequently, these challenges contribute to a significant burden of oral diseases and disparities in accessing dental care.²

Neglecting dental care and treatment can have extensive repercussions for individuals' overall health, quality of life, and public health at large. Common oral health issues such as dental caries, gum diseases (periodontal diseases), and traumatic injuries are largely preventable and can result in significant pain, discomfort, and functional limitations.³ Furthermore, poor oral health has been associated with systemic health conditions such as cardiovascular disease, diabetes, and adverse pregnancy outcomes.⁴⁻⁶

Oral health conditions also pose a considerable public health concern. For instance, dental caries affect more than half of the global population, imposing a substantial economic burden on both individual and public resources. Additionally, dental problems can lead to debilitating health issues and even mortality, contributing significantly to the calculation of Years of Life Lost (YLL), which is a component of Disability-Adjusted Life Years (DALY).⁷

Health-Seeking Behaviors (HSBs) encompass a range of actions and decisions individuals make to either maintain good health or prevent illness.⁸ In the context of dental care, these behaviors are influenced by various factors such as socio-economic status, gender, age, the type and severity of the dental condition, as well as educational and cultural backgrounds.⁹ Dental care-seeking patterns in Nigeria, like in many developing countries, are

often motivated by factors like experiencing pain, and limited by financial implications, and limited awareness of available dental services.⁹⁻¹⁴ Nigeria is typically divided into distinct northern and southern regions, each characterized by unique cultures, dominant religions, and geographical features. Kano State, located in northern Nigeria, is the most populous state in the country and serves as the commercial hub for the region. The population in Kano is diverse, predominantly adheres to the Muslim faith, and primarily communicates in the Hausa language.¹⁴

Data from southern Nigeria suggest that dental services utilization rates range from 15.5% to 56.5% of the population, with students and pregnant women constituting 7.8% and 33% of users, respectively.¹⁵⁻¹⁹ The most common reason for their seeking dental care is pain from toothache, often caused by untreated tooth decay, with dental extractions being the most requested treatment. In addition, females tend to utilize dental services significantly more than males, and the typical patient age is around 40 years old.

There is a dearth of data regarding dental care behavior in northern Nigeria, particularly in Kano State. The only available data on dental services utilization in northern Nigeria is from Katsina State, where the predominant dental care-seeking population comprises males, with dental extraction being a common consequence of toothache and untreated dental caries.¹³ The modal population falls within the 21 to 30-year-old age group.¹³

Understanding the patterns of dental care utilization in the region is essential for identifying gaps in oral healthcare delivery, which can inform strategies aimed at achieving improved public health outcomes. This knowledge is crucial for the efficient allocation of human and material resources and the development of healthcare policies that are culturally sensitive. The primary objective of this study is to describe the dental care utilization patterns in Kano State. This will be achieved by analyzing the clinic attendance records of adults at a major tertiary hospital over a one-year period.

Materials and Methods

This study involved a retrospective examination of patient records from the Oral Diagnostic Sciences (ODS) clinic at Aminu Kano Teaching Hospital (AKTH) in Kano. The data collection period spanned from November 2021 to October 2022.

Aminu Kano Teaching Hospital (AKTH) is the main tertiary healthcare institution in Kano state. It provides a wide array of specialized medical and surgical services, including various dental specialties.²⁰ The ODS clinic at AKTH is the initial point of contact for adults and individuals aged 16 years and above seeking dental consultations, catering to approximately 15,000 patients annually.

Patient information, including age, gender, and chief dental complaints, was extracted using a specifically designed data collection tool adapted from the WHO oral health survey tool and relevant literature.²¹ Chief presenting complaints were categorized into groups, such as dental pain, bleeding gums, dental caries (hole in the tooth), broken teeth, tooth replacement, or routine checkups.

Age groups were delineated as follows: Adolescents (16-19 years), Youth (20-24 years), Young adults (25-44 years), Middle-aged (45-60 years), and Elderly (>60 years). Records with incomplete data were excluded from the study. Individuals under 16 years of age, who typically receive care in the Pediatric Dentistry clinic, were not part of this study.

Data analysis was conducted with SPSS version 20 (IBM Corp.; Armonk, NY, USA). Descriptive analyses were conducted for means, medians, Interquartile Range (IQR), proportions, standard deviations, and frequencies, which were presented in tables and graphs. Logistics regressions were employed to assess the association between the demographic variables (*i.e.*, sex, age group) and the likelihood of experiencing specific dental complaints (*i.e.*, pain, routine check-ups, tooth replacement, facial swellings, and dental trauma). All tests of significance were carried out at a p-value threshold of ≤ 0.05 .

Ethical considerations

The study was conducted in accordance with the Declaration of Helsinki and the Nigerian National Code for Health Research Ethics. Approval was obtained from the Health Research Ethics Committee, Bayero University, Kano, Nigeria under reference numbers NHREC/06/12/19/127 and BUK/HREC/251.

Results

One thousand six hundred and twenty patients between the ages of 16 and 103 visited the ODS clinic during the study period. The majority of the patients were males (Table 1).

The highest proportion of patients belonged to the young adult and youth age groups, while the elderly population was the least represented for both males and females (Figure 1).

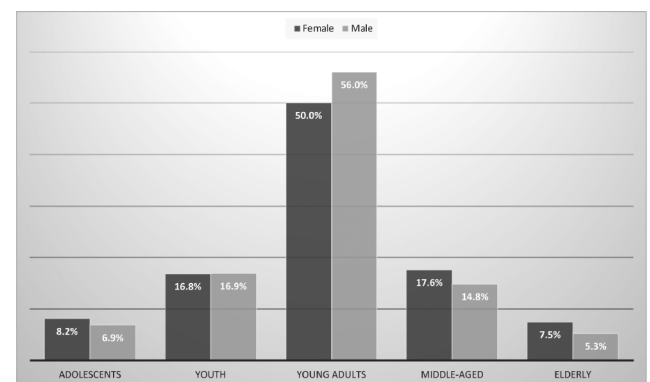


Figure 1. Distribution of age group and sex of the study participants.

Table 1. Sex and age distribution of patients who visited the oral diagnostics clinic.

Gender	n (%)	Range	Mean±SD	Median (IQR)
Female	722 (44.6)	16-103	35.6±14.6	32 (24.8-45)
Male	898 (55.4)	16-87	34.3±13.5	30 (25-40)
Total	1620 (100)	16-103	34.9±13.9	31 (25-42)

SD, Standard Deviation.

Most of the patients were of the Hausa ethnic group (Table 2).

Dental pain is depicted as the most prevalent reason for clinic visits (Figure 2). The association between the top five chief complaints and patient demographics is presented in Table 3 and Table 4.

Discussion

In this study, there was a male-favored gender distribution among patients, consistent with previous research in northern Nigeria.^{12,13} However, the slightly lower proportion of males compared to previous studies may indicate that education and the cosmopolitan nature of Kano, particularly in this age of easy access to information, have begun to re-shape previously entrenched cultural and religious attitudes toward healthcare in the region.¹²

These findings contrast with the observations made in southern Nigeria, where females constituted the majority of dental clinic attendees.^{8-11,15-19} This divergence in gender distribution can be attributed to the cultural norms and traditional gender roles prevalent in northern Nigerian society, which significantly influence healthcare-seeking behaviors and often result in fewer women seeking medical care. In this context, women need permission from male family members, like fathers or husbands, before leaving home for health purposes. Additionally, Islamic teachings emphasize modesty and encourage women to maintain privacy, making them more comfortable seeking care in female-only clinics.^{22,23} The average age of dental patients in this study is comparable to Lagos but higher than Enugu and Katsina, according to previous studies.^{8,10,13} This disparity may be attributed to several factors influenced by the cosmopolitan and commercial nature of Kano and Lagos as economic hubs in northern and southern Nigeria, respectively. These include migration patterns, economic opportunities, and healthcare accessibility, which likely draw a more diverse, older population seeking den-

tal care compared to less cosmopolitan areas. As such, different population dynamics in less-urban cities like Enugu and Katsina probably account for the relatively younger patient population seeking dental treatment there.²⁴

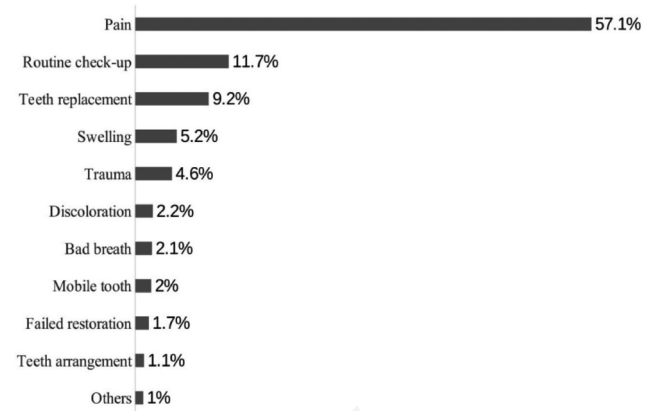


Figure 2. Distribution of the chief dental complaints.

Table 2. Distribution of study participants according to their ethnicities.

Ethnicity	Frequency	Percentage
Hausa	1323	81.7
Igbo	71	4.4
Fulani	66	4.1
Yoruba	50	3.1
Others*	101	6.7

Others refers to Kanuri, Igala, Idoma, Nupe, Lebanese, Arabians etc.*

Table 3. Association between selected chief complaints and demographic features of study participants (n=1547).

Demographics	N	Pain			Routine check-up			Teeth replacement		
		Prevalence n (%)	aOR (95% CI)	p	Prevalence n (%)	aOR (95% CI)	p	Prevalence n (%)	aOR (95% CI)	p
Sex										
Female (ref)	697	409 (58.7)	1.0		83 (11.9)	1.0		51 (7.3)	1.0	
Male	850	488 (57.4)	0.96 (0.78-1.2)	0.66	100 (11.8)	0.97 (0.71-1.3)	0.82	84 (9.9)	1.4 (0.98-2.1)	0.06
Age group										
Adolescent (ref)	116	60 (51.7)	1.0		12 (10.3)	1.0		12 (10.3)	1.0	
Youth	258	158 (61.2)	1.5 (0.95-2.3)	0.09	28 (10.9)	1.1 (0.52-2.2)	0.87	15 (5.8)	0.54 (0.24-1.2)	0.13
Young adult	830	477 (57.5)	1.2 (0.84-1.8)	0.27	117 (14.1)	1.4 (0.74-2.6)	0.30	63 (7.6)	0.74 (0.38-1.4)	0.36
Middle-aged	245	145 (59.2)	1.3 (0.86-2.1)	0.20	18 (7.3)	0.67 (0.31-1.4)	0.32	33 (13.5)	1.4 (0.70-2.9)	0.32
Elderly	98	57 (58.2)	1.3 (0.75-2.2)	0.37	8 (8.2)	0.73 (0.29-1.9)	0.52	12 (12.2)	1.3 (0.54-3.0)	0.59

aOR, Adjusted Odds Ratio; CI, Confidence Interval; ref, reference group.

Table 4. Association between selected chief complaints and demographic features of study participants (n=1547).

Demographics	N	Facial swelling			Dental trauma		
		Prevalence n(%)	aOR (95% CI)	p	Prevalence n(%)	aOR (95% CI)	p
Sex							
Female (ref)	697	44 (6.3)	1.0		34 (4.9)	1.0	
Male	850	34 (4.0)	0.63 (0.40-1.01)	0.05	34 (4.0)	0.83 (0.51-1.4)	0.45
Age group							
Adolescent (ref)	116	7 (6.0)	1.0		10 (8.6)	1.0	
Youth	258	12 (4.7)	0.74 (0.28-1.9)	0.54	16 (6.2)	0.71 (0.31-1.6)	0.41
Young adult	830	35 (4.2)	0.72 (0.31-1.7)	0.44	31 (3.7)	0.41 (0.19-0.86)	0.02
Middle-aged	245	16 (6.5)	1.1 (0.43-2.7)	0.86	8 (3.3)	0.35 (0.14-0.92)	0.03
Elderly	98	8 (8.2)	1.4 (0.49-4.1)	0.53	3 (3.1)	0.33 (0.09-1.2)	0.10

aOR, Adjusted Odds Ratio; CI, Confidence Interval; ref, reference group.

The study results reaffirm that the most common presenting dental complaints in this population are from preventable conditions. As seen in previous Nigerian and developing country research, dental pain and dental caries were the predominant patient concerns reported.^{8-13,15-19,25,26} Dental caries arise from poor oral hygiene and the neglect of preventive routines, including the use of fluoride-containing toothpaste, twice daily toothbrushing, and frequent snacking on refined sugar-based drinks and diets. These findings, therefore, highlight the need to prioritize preventive oral health efforts and promotion initiatives.

Sex-based differences were evident in the patterns of chief dental complaints in this study, although not statistically significant. Females had higher odds of reporting dental pain compared to males, consistent with biological differences in pain perception between sexes. It is well established that females generally have a lower pain threshold and are more inclined to perceive and vocalize pain relative to males.²⁷ Conversely, more males requested a prosthetic replacement for tooth loss due to trauma, likely resulting from increased participation in physically demanding activities or contact sports.²⁸

Similarly, more females requested routine dental checkups and preventive care compared to males. This aligns with previous findings that have reported that females generally have more favorable health-seeking behaviors, including placing greater emphasis on dental care, than males.^{29,30} Additionally, the proportion of females who reported facial swellings was statistically significant, which may be related to sociocultural expectations for females to maintain aesthetic appeal.¹⁸ Conversely, males in the current study were less likely to seek treatment promptly; this may also reflect a conformity with societal norms that demand that males project toughness and place less importance on their looks.^{29,30}

This study also observed a statistically significant relationship between young adults and middle-aged individuals and the incidence of dental trauma. Individuals at this age may be at risk of traumatic dental injuries from occupational hazards or lifestyle choices that involve increased outdoor activities and physical labor. This age group is often associated with financial independence, awareness of dental health, and autonomy in decision-making, which can comparatively increase their capability to access and utilize dental services over other age groups.¹⁸

The limitations of this study are rooted in its single-center and retrospective design, which has constrained the opportunity for more extensive exploratory analyses and, consequently, the broader applicability of the findings. In the future, conducting a multi-center study that integrates a qualitative component may provide deeper insights into the factors shaping health-seeking behaviors, particularly dental health, within Kano state and beyond.

Conclusions

The findings of this study shed light on the nuanced dynamics of dental healthcare utilization patterns among adolescents and adults in Kano, Nigeria. The sex distribution reflects an evolving healthcare landscape in the region. The proportion of individuals with dental pain highlights the need to prioritize preventive oral health efforts and promotion initiatives within the region. Sex-based differences in chief dental complaints underscore biological and sociocultural factors influencing healthcare-seeking behaviors. Furthermore, the statistically significant association between young and middle-aged individuals and dental trauma highlights occupational hazards and lifestyle factors as key determinants of dental health outcomes.

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