



Received: 19 December 2025

Revised: 28 December 2025

Accepted: 26 January 2026

Published: 11 February 2026

Page No - 19-30

DOI - 10.55640/ijmsdh-12-02-03

Article Citation: Kipsumbai, A. C., Kirui, D. J. ., & Gitonga, E. . (2026). Influence of Individual Factors on The Utilization of Dental Services Among Patients Attending Public Health Facilities in Nairobi City County, Kenya. International Journal of Medical Science and Dental Health, 12(02), 19-30. <https://doi.org/10.55640/ijmsdh-12-02-03>

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Influence of Individual Factors on The Utilization of Dental Services Among Patients Attending Public Health Facilities in Nairobi City County, Kenya

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Abstract

Background: Approximately 3.5 billion people of all ages and races globally are affected by dental diseases. Overall human health, well-being and quality of life can fundamentally be measured by an individual's dental health. Despite the wide distribution of dental diseases, few individuals seek dental care services mostly for treatment. To tackle this problem, the populace requires to utilize health facilities to receive basic preventive services.

Objective: This study was carried out to examine the influence of individual factors on the utilization of dental services among patients attending public health facilities in Nairobi City County, Kenya.

Methods: A cross-sectional analytical study was conducted among 384 randomly selected respondents using structured questionnaires, and the data were analyzed using the Statistical Package for the Social Sciences (SPSS) and spreadsheet software.



Results: Findings indicated sociodemographic factors have no significant impact on the utilization of dental services in public facilities, P-values greater than 0.05 across all variables. Individual preferences, awareness, time availability, perceptions, psychological factors, and health needs are critical determinants in seeking dental services with p-value of 0.001. Individual perceptions significantly guide decision-making in dental care $p = 0.001$. Individuals' awareness of dental services offered in county health facilities significantly influence dental service utilization, $p=0.001$. Statistically significant relationship $p=0.045$ was observed that general health conditions influence dental care-seeking behaviors. Necessity-driven utilization was significant $p=0.001$ but barriers like high costs and patients' busy schedules hamper individuals from seeking timely dental services.

Conclusion: Individual preferences, awareness, time availability, perceptions, psychological factors, and health needs are critical determinants in seeking of dental services.

Recommendations: Focus should be placed on the key determinants of utilization of dental services – proximity to health facilities, awareness, affordability, and patient satisfaction to enhance utilization. Further Nairobi City County government should prioritize integration of primary dental care into primary health care.

Keywords: Dental services, Utilization, Patients, Individual, Public health facilities

Introduction

Dental diseases are serious public health challenges with worldwide spread affecting all ages and races. It is estimated that close to 3.5 billion people globally about half of the world populace are affected by one or the other form of oral/dental disease as highlighted in the Global Oral Health Status Report [1]. Despite the wide distribution, few individuals seek dental care services from health facilities mostly for treatment [1]. Dental health can be a fundamental measure of overall human health, well-being and quality of life [2]. Oral/dental health is a state of being free from tooth decay, tooth loss, gum disease, chronic mouth and facial pain, oral infection and sores, oral and throat cancer, and other diseases and disorders that constraint a person ability to bite, chew, smile, speak, and psycho-social well-being [3]. Unhealthy dentition may affect individual's quality of life negatively through social stigmatization and low self-esteem [4]. This means that dental health affects not only the teeth but much more including person's smile. Periodic dental visit to a health-care facility indicates dental services utilization.

Individuals visit health facilities to get preventive, promotive, curative, rehabilitative and palliative services in order to remain health [5]. When people visit dental clinic, they get the chance to achieve optimum dental health service and avoid future serious and expensive conditions for example malocclusion, tooth loss, periodontal diseases and oral cancer.

Dental health is major influencer of an individual overall health and cannot be managed in isolation because it contributes to the incidental quality of life. In order to maintain good dental health status, consistent dental visits to health facilities reinforces early diagnosis, promotive, preventive oral health habits and management of dental anomalies. In a study in USA - 2019, approximately 35% of adults over 18 years did not visit a dental clinic [7]. In a rural study in Nigeria 76.1% of observed population had not visited a dental clinic [8]. Kenya National Oral Health National Survey (KNOHS) reported 72.3% of respondents had visited a dental care provider before the survey while 13.7% attended six months preceding and 16.4% did so last 12 months [9].

The core of health care operations is the consumption of health services which results from habits of users and health professionals who provide them in the health system [10]. Oral health care, an integral component of general health and should not be addressed in isolation, as it contributes significantly to an individual's health-related quality of life (QoL) [11]. Optimum utilization of health services requires that health facilities be adequately staffed with the right personnel, medical commodities and technologies and an effective governance structure to be able to offer desired health care services. This then means that dental health policies should be part of national health-care strategies.

Utilization of dental services is a yearly number of visits to the dental clinic per individual or ratio of persons visiting an oral health worker within a period of time annually [12]. Dental care utilization is the proportion of the population who reach out for dental services over a span of time [4]. Dental services utilization thus can be stated in terms of patients visits to dental facilities and services received.

Most dental diseases are preventable which majority of population don't take note of either by assuming or ignorant of. This can be addressed by individuals visiting dental facilities and use the available resources including workforce. Practice has shown that measures on preventive dental behavior contribute positively in improving health outcomes among the general populace. It is argued that prompt access to dental services is crucial for good maintenance of oral health which is key to a person's well-being [13]. This underpins the necessity that



individual's timely access to dental care supports prevention, early intervention, and overall health outcomes. [8] reported that in most instances dental health is neglected by a large population ultimately contributing to the global burden of oral diseases. A study in Sudan by [14] revealed that about 64.6% respondents had never utilized dental services while those who had ever sought (66.9%) dental services indicated the primary purpose for visit was of pain in the mouth. The pain could be a problem with oral tissues, or after procedures of dental treatment or repeat follow-up treatment.

National Oral Health Survey [9] revealed that children and adults had dental caries and gum related treatment needs which are unmet. The report concluded that oral health seeking behaviour among Kenyans was poor and this unfavorably affected the quality of life by presence of dental diseases and conditions. Further, the population oral hygiene practices were found to be hapless. Therefore, requires carefully assessment to understand patients concern, expectations and perceptions of health care services as they could probably influence health services utilization. Different findings have shown that dissatisfaction with fees charged and quality of services offered has majorly has led to poor compliance to treatment proposals, depressed visits, or stoppage of follow up treatment [15].

Dental health professionals can facilitate equitable and better health outcomes and may have crucial role in addressing differential health outcomes. Dental care access is the ability to achieve available, appropriate services as dictated by personal, economic, cultural, geographic, and other factors. It is therefore imperative that policies and programs should focus on encouraging individuals to visit health facilities and at the same time provide an effective and efficient health system.

Statement of the Problem

Dental diseases prevention and early detection can be achieved by utilizing dental health care services regularly. Marginal dental care utilization impact not only individuals or communities but the whole nation making it a major public health concern [16]. Dental diseases are the most prevalent chronic diseases worldwide, contributing to a costly burden to health care services provision [17]. It is observed that the percentage of children who never visited dental clinic were 46.7% while 18.3% visited a dentist a year before survey [9]. Further the survey established 51.6% respondents had no particular reason for not visiting the dental clinic. Same survey found out that 83% of adults had visited a dental clinic before because they had a problem with their teeth or had pain in the mouth. Dental health facilities provide a chance for primal preventive, diagnosis and

treatment, oral health sensitization and education, and rehabilitative interventions [18]. The overall prevalence of dental caries in primary and permanent teeth among children (5-, 12-, and 15-year-olds) was 23.9%. the prevalence of dental caries has been reported to vary between 60-90% in industrialized countries where the disease is less common and less severe in African countries [17]. Understanding the factors that influence dental service utilization is critical for designing effective interventions aimed at improving service uptake. However, evidence on the utilization of dental services within public health facilities remains limited. This study therefore sought to examine the influence of individual factors on utilization of dental services among patients attending public health facilities in Nairobi City County, Kenya, in order to inform targeted strategies for improving use, access and uptake of dental/oral health services.

Objective of the study

To examine the influence of individual factors on the utilization of dental services among patients attending public health facilities in Nairobi City County, Kenya.

Review of Related Literature

Individual factors influencing utilization of dental services

Health services utilization is understood to be shaped by individuals' behaviors [20]. Individual factors entail people's perception about dental care. These perceptions among the old person in developing countries differs and right attitude in that direction normally encourage visit health facilities to seek for dental services. Health outcomes are determined by individual characteristics, as well as physical and socioeconomic conditions [11]. [21] study showed old people having inadequate perception of dental care are more liable to seek curative DHS and emphasis that "hapless" perception means greater dental needs of the people. A positive attitude towards oral health leads to use of DHS. This includes increase in the frequency of brushing teeth among old persons, the frequency usually depends on the caregiver [22].

Kenya Oral Health Survey [9] reported 51.6% respondents had no particular reason for not visiting a dental clinic over one year. However, general explanation given for non-visiting dental clinic was: "long distance (2.4%), rude professionals (0.8%), tooth loss fear (7.7%), fear of painful treatment (8.3%), long waiting time (0.8%), expensive treatment (6.5%) and other unspecified reasons (22%)". The long distance to access health facilities offering dental services by individuals is a big hindrance to dental



services use because transport cost could be relatively high [22]. It is imperative that dental clinics be integrated with all health care services in local health facilities to encourage the populace visit for dental services.

Andersen's behavioral model (1995), individual imagined illness or chances of happening is a principal explanation for seeking dental services. Parents knowledge on oral health, beliefs, and attitudes determine children's dietary habits and oral health seeking behaviours [24]. When parents determine that their children dental health as unsatisfactory, they utilize dental care services more frequently than those who evaluate their children status as good. Further the perception of parents on dental health of their children determines dental health care utilizations. A study in China on dental health services utilization patterns among preschool children concluded that the need for dental care is disease oriented [25]. This explanation may be true about Nairobi patients' behavior which may require workable actions in promoting preventive dental care among the community. The same study further deduced that perceived children total health status as poor are rarely taken for dental care services. This could be because of the belief that general health is crucial and imperative than dental health relegating dental health as a secondary health concern.

Health services utilization, dental included is crucial to transformation of health expectations in developing countries. Frequent dental visit indicates satisfactory oral health care utilization which contributes to optimal dental health and help in curbing costly serious future conditions for example tooth loss, oral cancer and periodontal diseases. Furthermore, preventive dental services have proved impressive in improving general population health outcomes. Dental health is closely associated to overall human health, with studies presenting a positive

correlation between poor oral hygiene and conditions such as pancreatic cancer, respiratory illnesses, and cardiovascular diseases. The frequency of dental checkups varies based on an individual's dental hygiene practices and age.

Materials and Methods

The study adopted a Cross-sectional analytical design to measure the association between utilization of dental services in public health facilities and the health outcomes within the target population was used. A cross-sectional survey was adopted since it comprised of the population sharing similar characteristics and differs in some key factors of interest like the age, income levels and geographical location. The design sought to examine the influence of individual factors in dental services utilization among patients seeking treatment in public health facilities in Nairobi City County and their effects on the population health outcomes.

The study was undertaken in Nairobi City County, Kenya public health facilities offering dental services. Nairobi City County was purposively sampled because it has the highest number of health facilities offering dental services among counties in Kenya. The population for this study was drawn from among patients visiting the twelve health facilities offering dental services, health care professionals, managers of facilities and County health officials of public health facilities Nairobi City County

The study sample size was derived from randomly selected 384 respondents as illustrated in computation done by Krejcie and Morgan (1970) using excel modeling formula as explained and retrieved freely online (2024)

Table 1: Sample size

Category	Sample Size	Sample Size percent
Patients	287	75%
Dental Health Workers	58	15%
County Health Officials (management)	12	3%
Other health workers	27	7%
Total	384	100%



Questionnaires were administered to sampled respondents over a period of time until the sample size was exhausted. The structure of the tool included closed-ended and open-ended questions. The questions administered to relevant respondents in respect to their attendance and responsibilities in public health care facilities. The scope of the questions ascertained the respondent's perceived reasons for the utilization of dental services in public health facilities in Nairobi City County. The researcher further used interview method to collect the data from focused group and key informants. Research assistants were recruited to assist in data collection, entry and other logistical assignments. They were further trained to enhance their competence and minimize possible data collection and data entry errors. Accordingly, the research tool included an attached introductory letter from the university and relevant government authorities meant to facilitate the acceptance by both the respondents and their respective organizations and consent form presented to respondents to fill before administration of the questionnaire. County and Ministry of health protocols and precautions were considered and observed to the later. Additionally, focus group discussions and key informant interviews were conducted.

Results

Table 2: Response Rate

Category	Sample Size	Respondents	Response Rate
Patients	287	243	85%
Dental Health Workers	85	32	38%
County Health Officials	12	7	58%
FGD/Interview	25	18	72%
Total	384	282	73%

Sociodemographic factors influencing utilization of dental Services

The study surveyed 243 patient respondents, with a nearly equal sex distribution 124 females (51.0%) and 119 males (49.0%). 31.7% of respondents were between ages 26 and 35 years, with smaller proportions represented in the younger bracket 0.8% aged 0-5 years, and the older age brackets 1.6% above 66 years. Nearly half of the respondents (49.8%) are married, followed by 28.4% single. A smaller portion of the population includes 12.8% who are divorced, 3.7% who are widowed, and 2.9% who fall into other categories. Additionally, 2.5% of the respondents did not disclose their marital status. Those with tertiary education 54.7%

form the majority of users, followed by 22.2% with secondary education. Additionally, 19.8% have completed university education, while 3.3% have only primary-level education. The P-value ($P = 0.481$) suggests no significant difference in utilization based on education.

Areas like Ngong (14.4%), Kamukunji (11.1%), Madaraka (12.3%), and Kikuyu (9.1%) had higher number of respondents, accounting for 50.6% of the total sample. Other areas such as Langata (4.9%), Kawangware (4.5%), and Ruai (6.2%)



contributed moderately to the sample. Nairobi West, Kileleshwa, and Nairobi Central Business District had very few respondents, with just 1-2 participants each. The chi-square test ($P = 0.505$) suggests no significant geographic disparities in dental service utilization. Geographic proximity to public facilities may not be a limiting factor.

In summary, the results indicate that sociodemographic factors are insignificant on the dental services utilization in public facilities, as indicated with P-values greater than 0.05 on table 3 below;

variables		frequency	percent	Chi-square (χ^2)	Degrees of freedom	P value
Gender	Male	124	51	2.135	4	0.711
	Female	119	49			
Age Bracket yrs	0-5	2	0.8	29.518	28	0.387
	6-15	9	3.7			
	16-25	54	22.2			
	26-35	77	31.7			
	36-45	57	23.5			
	46-55	30	12.3			
	56-65	10	4.1			
	Above 66	4	1.6			
Marital Status	N/A	6	2.5	22.492	20	0.314
	Single	69	28.4			
	Married	121	49.8			
	Unmarried	31	12.8			
	Divorced	7	2.9			
	Widowed	9	3.7			
Highest Level of Education	Primary	8	3.3	11.567	12	0.481
	Secondary	54	22.2			
	Tertiary	133	54.7			
	University	48	19.8			
Occupation	Employed	128	52.7	2.022	4	0.732
	Unemployed	115	47.3			
Area of residence				103.172	104	0.505

Table 3: Sociodemographic influencing utilization of dental services



Individual factors influencing utilization of dental Services

Concerning preference for County public hospital dental services a significant relationship ($\chi^2=121.954$, $df=16$, $p=0.001$) was observed, indicating that individual preferences impact of dental services utilization in public health facilities as indicated in table 4 below;

Table 4.: Individual factors influencing utilization of dental services

Variables		freque n ny	perce n t	Chi- square (χ^2)	Degrees of Freedom	P value
You prefer seeking dental services in county public hospital	Strongly disagree Disagree Neutral Agree Strongly agree	18 61 83 54 27	7.4 25.1 34.2 22.2 11.1	121.954	16	0.001
You are aware of dental services offered in county public hospital	Strongly disagree Disagree Neutral Agree Strongly agree	21 54 81 65 22	8.6 22.2 33.3 26.7 9.1	93.911	16	0.001
Busy schedule doesn't accord time to seek dental services	Strongly disagree Disagree Neutral Agree Strongly agree	22 72 90 43 16	9.1 29.6 37.0 17.7 6.6	28.3	16	0.029
Patient's perceptions normally leads to the choice of health facility to seek dental services	Strongly disagree Disagree Neutral Agree Strongly agree	37 61 90 42 12	15.2 25.1 37.0 17.3 4.9	53.713	16	0.001
Fear and anxiety for dental procedures blocks one from visiting health facility	Strongly disagree Disagree Neutral Agree Strongly agree	23 58 91 58 13	9.5 23.9 37.4 23.9 5.3	33.894	16	0.001
Patients seek dental services only if there is a dental problem	Strongly disagree Disagree Neutral Agree Strongly agree	29 52 77 63 22	11.9 21.4 31.7 25.9 9.1	35.431	16	0.003
Need for dental services normally propels one to visit health facility for the treatment	Strongly disagree Disagree Neutral Agree Strongly agree	22 58 89 56 18	9.1 23.9 36.6 23.0 7.4	44.057	16	0.001
Presence of other medical issues affect seeking dental services	Strongly disagree Disagree Neutral Agree Strongly agree	25 67 84 58 9	10.3 27.6 34.6 23.9 3.7	26.673	16	0.045



Most respondents (34.2%) disagreed with preferring dental services in county public hospitals, followed by 22.2% who remained neutral. Awareness of dental services offered significant influence on dental service utilization ($\chi^2=93.911$, df=16, p=0.001). The majority (33.3%) disagreed with being aware of the services available, while 26.7% were neutral.

Respondents time constraints impact dental service utilization, as indicated by a significant chi-square result ($\chi^2=28.3$, df=16, p=0.029). A larger proportion of respondents (37.0%) disagreed that a busy schedule prevents them from seeking dental care. Individual perceptions significantly guide decision-making in dental care ($\chi^2=53.713$, df=16, p=0.001). While 37.0% of respondents disagreed that perceptions influence their choice of dental facilities, this association remains noteworthy.

Fear and anxiety about dental procedures significantly affect dental service utilization ($\chi^2=33.894$, df=16, p=0.006). Fear and anxiety were not barriers for many, with 37.4% disagreeing and 23.9% neutral. On patients seeking dental services only if there is a dental problem significantly impact service utilization ($\chi^2=35.431$, df=16, p=0.003). Over a third of participants (31.7%) disagreed that they seek dental care only when they face specific problems. Necessity-driven utilization was significant ($\chi^2=44.057$, df=16, p=0.001). While 36.6% disagreed that the need for dental services propels them to visit health facilities, this factor plays a critical role in utilization patterns. A statistically significant relationship ($\chi^2=26.673$, df=16, p=0.045) was observed, suggesting that general health conditions influence dental care-seeking behaviors. Most respondents (34.6%) disagreed that other medical issues affect their decision to seek dental services.

Focused group discussions

The key informants engaged were majorly direct service providers. The survey results suggest a generally positive outlook on certain aspects of dental services in the facility, with areas for improvement identified. On patient inflow and satisfaction, majority of respondents (85.7%) feel that the number of patients seeking dental services is good, indicating demand for dental services in the facilities. However, there seems to be a mixed opinion on patient satisfaction with public dental services in Nairobi City County, as only 71.4% of respondents believe that Nairobi City County residents are satisfied with the services offered by public health institutions.

In regard to patient perception and awareness majority feel that patients perceive the dental services as bad, reflecting potentially poor public perception or dissatisfaction with service quality. The respondents in the discussion observed that despite being aware of dental services offered in county public hospitals, very many people still believe that private hospitals are the best placed in offering dental care rather than working with the public hospitals due to the perceived slow services and attitudes among staff. For example, responses from patients;

"I have gone to the public hospitals like twice and never got the right services, they are slow and sometimes don't talk to people well so I rather go to the private hospital"

"Our public hospitals do not offer dental clinics and I would lie when I say that they do offer since I have never heard of someone who attended dental services in the public hospital"

However, health professionals argue that health facilities have service charters which they adhere to at all times contradicting responses from patients that healthcare providers operate at free mode without any clear guidance. Further, they indicated that there are adequate and available resources for dental services utilization in the facilities though not supported by the patients.

Respondents' perception indicated that, patients tend to choose health facilities seeking dental service where it is affordable, quick and faster and health providers believe patients do not take dental health seriously.

Multiple Regression Analysis

Predictors of dental service utilization

A multiple regression analysis to identify the key factors affecting dental service utilization. The regression model included sociodemographic and individual factors. Sociodemographic factors such as gender (p=0.223), age (p=0.974), marital status (p=0.163), education level (p=0.423), and occupation (p=0.675) did not show significant predictive value.

**Table 5: Predictors of dental services utilization**

Predictors	p-values
Proximity to dental health facilities	P= 0.001
Awareness of available services	P = 0.002
Affordability of treatment	P = 0.015
Patient satisfaction	p = 0.030
Preference for seeking services at a county public hospital	P = 0.000

The results revealed that proximity to dental health facilities ($p=0.001$), awareness of available services ($p=0.002$), affordability of treatment ($p=0.015$), and patient satisfaction ($p=0.030$) were strong predictors of utilization. These factors remained significant even after adjusting for confounders, indicating their independent influence.

Table 6: Adjusted R-Square

Model	R-Square	Adjusted R-Square	Standard Error of Estimate	F-Statistic
Full Model	0.443	0.351	0.965	4.839
Refined Model	0.340	0.328	0.982	30.592

The adjusted R-square value (0.351) indicated 35.1% of the variance in dental service utilization. The F-statistic (4.839, $p=0.000$) confirmed overall model was statistically significant. A refined model using only the most significant predictors improved interpretability while maintaining a strong fit (R-square=0.340, adjusted R-square=0.328). This suggests that focusing on these key determinants - proximity, awareness, affordability, and patient satisfaction can enhance service utilization in public health facilities.

Individual factors are the strongest positive predictors of dental service utilization. The model explains 44.3% of the variance in utilization, making it a moderately strong predictor of dental service use.

Discussion

Individual factors influencing utilization of dental Services

This research examined influence of individual factors including sociodemographic like age, sex, income in dental services use. The findings indicate sociodemographic factors have no significant influence on dental services utilization in public facilities, as indicated by P-values greater than 0.05 across all variables suggesting that these factors were not strong predictors of whether individuals sought dental care services or not in the public health facilities in Nairobi City County. No noticeable variance in dental service use between genders, suggesting that sex does not play a major role. Sex equality in healthcare access is evident; the lack of statistical significance ($P = 0.711$) suggests that sex might not significantly influence utilization of dental services in public health facilities. Although younger adults may

utilize dental services more frequently, age was not a significant determinant in service utilization. Marital status and employment status also did not appear to have a considerable impact, implying that family responsibilities or financial status are not primary factors in accessing dental care in public facilities. Despite higher education being linked to greater health literacy, it did not significantly influence the frequency of dental service use. Additionally, geographic location had little effect on service utilization, meaning that proximity to dental facilities does not seem to be a significant barrier. Overall, these results suggest that sociodemographic factors, while potentially relevant at an individual level, do not significantly shape the overall patterns of dental service use in public healthcare settings in Nairobi City County.

These findings contest the assumption that sociodemographic significantly influence or drive dental services use. The results



differed with a similar study in Nigeria [28] that shown that all individual predisposing factors except income and gender significantly relate with dental utilization outcomes. The findings contradict a study in Serbia [29] that suggest Serbian adult's sociodemographic factors influence utilization of dental services. These research findings mean that dental services utilization may be as result of other factors rather than individual sociodemographic characteristics. Therefore, initiatives to increase dental services use may focus on improving access, cost issues, awareness among other factors rather than targeting individual sociodemographic.

Further, the findings show that individual factors such as preferences, awareness, time availability, perceptions, psychological factors, and health needs are critical determinants in patients seeking dental services at public health facilities in Nairobi. The results were all statistically significant in determining the likelihood of individuals utilizing dental services. The p-values being less than 0.005, these factors were found to be imperative in predicting dental service utilization. The findings indicate that dental service utilization is not only a matter of access or affordability but patient's personal preferences play a substantial role. Dental health awareness specifically among individuals with a better understanding of its importance appeared as a significant factor influencing the possibility of seeking dental care. Psychological factors, such as dental anxiety, may perhaps affect the decision to visit a dental clinic, with those experiencing higher levels of fear or negative perceptions of treatment of dental problems being less likely to utilize dental services, these finding agree with a Uganda [30] study that exhibited anxiety and fear to a strong statistical association with utilization of dental care services.

The assessment of utilization of dental services among patients seeking treatment in public health facilities in Nairobi City County indicates a significant demand for dental services, with a chi-square value of $\chi^2 = 29.220$ and $p = 0.022$ indicate a notable association between the perceived demand for dental services and the frequency with which patients seek for them. The p-value 0.05, offers sufficient evidence - the demand for dental care is indeed significant. Further, key informants (direct service providers) interviewed, 86% expressed that the number of patients seeking dental services is good, indicating a moderate level of dental care services in the facilities. Overall, large number of respondents agree that dental services are comprehensive and there is a good flow of patients, but there are mixed opinions about the adequacy of resources and the daily workload of dental workers. Therefore, the findings suggest that

dental service utilization in Nairobi City County health facilities is moderate.

The multiple regression analysis identified significant predictors of dental service use. Awareness of services available in county public hospitals plays a crucial role, with coefficients of 0.197 ($p = 0.013$) and 0.179 ($p = 0.026$) indicating that informed individuals are more probable to use these services. In contrast, lack of information on the range of services offered in the dental clinic is a significant negative predictor (coefficient -0.199, $p = 0.010$), meaning that insufficient awareness reduces the likelihood of service utilization. Together, these findings highlight that patients' knowledge about county public hospital dental services is pivotal in driving utilization, while gaps in information serve as a major barrier.

Conclusion

Dental service utilization among respondents was low, with only 14% reporting frequent use of dental care services. The individual factors significantly influenced dental service utilization patterns. Even though other studies identify dental fear and anxiety as commonly reported barriers, the majority of respondents (61.3%) in this study did not identify them as major deterrents to seeking dental care services.

The perceived need for treatment significantly influenced utilization, with over half of the respondents (56.4%) seeking dental care only when they experienced problems like pain, signifying limited uptake of preventive services. Cost was perceived as a notable barrier, with more than one-third (35%) of respondents reported dental care services to be expensive. Time constraints and busy schedules were also significantly associated with reduced utilization of dental services ($p = 0.029$).

Notwithstanding moderate to high awareness of available dental services, awareness did not reliably translate into service utilization ($p = 0.001$). Generally, patterns of dental service utilization reflected prevailing oral health seeking behaviors among the residents of Nairobi City County ($p = 0.003$). These findings highlight the necessity for interventions that address apparent need, affordability, and accessibility in order to improve preventive dental service uptake and oral health outcomes.

Recommendation

Based on the findings of this study, several recommendations are proposed to enhance the utilization of dental services among patients attending public health facilities. First, the Nairobi City County government should develop and implement targeted oral health education and promotions through



outreach campaigns using mass and social media and community health workers and promoters to encourage dental care uptake and preventive care.

Second, the health facilities management to consider extended dental clinic hours to include early mornings, evenings and weekends to accommodate busy/working individuals and subsidize dental services.

Third, dental professionals and other health workers should be supported and empowered in patient-centered communication and engagements to reduce fear and anxiety among individuals seeking dental care services. Lastly, further longitudinal or mixed-methods designs to explore more individual and contextual factors influencing dental service utilization

Ethical Considerations

Ethical protocols were upheld with assurance to respondents of confidentiality and safety of collected data and its academic use. Kenyatta University Ethics Review Committee and National Commission for Science, Technology and Innovation (NACOSTI) approved the study. Nairobi City County relevant office and management of the selected facilities granted permission to administer the questionnaires to respondents. Further, informed consent was acquired from every respondent. The reports resulting from the study do not contain any information that could be used to identify participants. Further, all possible precautions were taken to hide or disguise individual respondents to protect their anonymity and confidentiality. Signed consent forms are kept well in a file cabinet to protect access by unauthorized individuals and personal identifiers were removed from study documents.

Conflict of interest

The authors declare no conflicts of interest.

Authors' Contributions

Authors have read and agreed to the published version of the manuscript.

Funding

The author(s) declare that there was no financial support received for the research, authorship and/or publication of this article

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