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Dental Healthcare Utilisation and Its Determinants Among Adults in Kabaw City, Libya: A Cross-Sectional Study

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ABSTRACT

Dental healthcare utilisation is a key component of oral health prevention and disease management, yet patterns of service use in low- and middle-income settings are often influenced by socioeconomic and behavioural factors. Evidence on adult dental healthcare utilisation in Libya, particularly in semi-urban areas such as Kabaw, remains limited. A cross-sectional study was conducted among 400 adults in Kabaw city, Libya, to assess dental healthcare utilisation and its associated determinants. Data were collected using a structured questionnaire covering sociodemographic characteristics, oral health behaviours, and dental visits within the previous 12 months. Logistic regression was applied to identify factors associated with utilisation, while negative binomial regression was used to examine visit frequency. Statistical significance was set at $p < 0.05$. Overall, 55% of participants reported visiting a dentist in the past 12 months, while only 16% attended regular preventive check-ups. Higher income and dental insurance were significantly associated with increased utilisation (OR = 1.60, p = 0.004). Behavioural factors, including regular toothbrushing and poorer self-rated oral health, were also associated with higher likelihood of dental visits (OR = 1.38, p = 0.021). Preventive visits were significantly lower than treatment-oriented visits (OR = 0.28, $p < 0.001$), indicating that utilisation was primarily symptom-driven. Dental healthcare utilisation in Kabaw appears to be influenced by socioeconomic status, behavioural practices, and perceived need, with a predominance of treatment-oriented care. Improving access to affordable services, enhancing preventive health education, and strengthening patient–provider communication may support more effective utilisation patterns and better oral health outcomes.

Keywords: Dental healthcare utilisation, Oral health, Preventive dental care, Health behavior, Kabaw.

استخدام خدمات الرعاية الصحية للأسنان ومحدداتها بين البالغين في مدينة كاباو، ليبيا: دراسة مقطعية

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ملخـــــص البحـــــث

يُعد استخدام خدمات الرعاية الصحية السنية عنصراً مهماً في الوقاية من أمراض الفم وعلاجها، إلا أن أنماط استخدام هذه الخدمات في الدول منخفضة ومتوسطة الدخل تتأثر بالعوامل الاجتماعية والاقتصادية والسلوكية. ولا تزال الأدلة المتعلقة باستخدام الخدمات السنية بين البالغين في ليبيا، خاصة في المناطق شبه الحضرية مثل مدينة كاباو محدودة. أُجريت دراسة مقطعية على 400 مشارك من البالغين في مدينة كاباو–ليبيا، بهدف تقييم استخدام خدمات الرعاية الصحية

السنية والعوامل المرتبطة بها. تم جمع البيانات باستخدام استبيان منظم يشمل الخصائص الديموغرافية والسلوكيات الصحية الفموية وعدد زيارات طبيب الأسنان خلال الاثني عشر شهراً الماضية. تم استخدام الانحدار اللوجستي لتحديد العوامل المرتبطة بالاستخدام، كما تم استخدام نموذج الانحدار ذي التوزيع الثنائي السالب لتحليل تكرار الزيارات. وتم اعتماد مستوى دلالة إحصائية عند $p < 0.05$. أظهرت النتائج أن 55% من المشاركين زاروا طبيب الأسنان خلال العام الماضي، بينما لم تتجاوز نسبة من يلتزمون بالفحوصات الوقائية الدورية 16%. وارتبط ارتفاع الدخل ووجود التأمين السني بزيادة استخدام الخدمات السنية بشكل معنوي .(OR = 1.60, p = 0.004) كما ارتبطت السلوكيات الصحية مثل الانتظام في تنظيف الأسنان والتقييم الذاتي السيئ لصحة الفم بزيادة احتمال زيارة طبيب الأسنان(OR = 1.38 ، p = 0.021).وكانت الزيارات الوقائية أقل بكثير من الزيارات العلاجية(OR = 0.28 ، (p < 0.001، مما يشير إلى أن الاستخدام يعتمد بشكل أساسي على ظهور الأعراض. تشير النتائج إلى أن استخدام خدمات الرعاية الصحية السنية في كاباو يتأثر بالعوامل الاجتماعية والاقتصادية والسلوكيات الصحية والإحساس بالحاجة للعلاج، مع الغالبية للنمط العلاجي مقارنة بالوقائي. وقد يساهم تحسين الوصول إلى الخدمات الميسورة، وتعزيز التوعية بالصحة الفموية، وتقوية التواصل بين المريض ومقدم الخدمة الصحية في تحسين أنماط الاستخدام والنتائج الصحية للفم.

الكلمات المفتاحية: الرعاية الصحية السنية، صحة الفم والأسنان، الرعاية السنية الوقائية، السلوك الصحي، كاباو.

1. Introduction

Oral health is widely recognised as a fundamental component of public health because it influences physical wellbeing, social functioning, and overall quality of life. Poor oral health may reduce daily functioning, affect confidence, and impair essential activities such as eating and communication. Evidence suggests that oral diseases affect a substantial proportion of the global population, particularly in low- and middle-income countries, where access to preventive and curative services remains uneven [1].

Dental healthcare services are essential for the prevention, early diagnosis, and management of oral diseases. Regular dental attendance has been associated with improved oral health outcomes, including reduced tooth loss and lower prevalence of untreated dental conditions [2]. However, utilisation of these services remains inconsistent and is influenced by a combination of socioeconomic, behavioural, and structural factors [1,3].

Previous research has demonstrated that dental healthcare utilisation is shaped by multiple determinants. Socioeconomic characteristics such as income, education, and insurance coverage have been consistently associated with access to and use of dental services. Individuals with higher income and better financial protection are more likely to utilise dental services regularly, whereas those with limited resources often delay care [3]. Similarly, inequalities in utilisation have been observed across demographic groups, with variations linked to age, gender, and educational attainment [2].

Behavioural factors also play a critical role in shaping utilisation patterns. Oral hygiene practices, perceived oral health status, and awareness of preventive care influence whether individuals seek dental services. Evidence suggests that individuals are more likely to seek care when symptoms become severe rather than for routine preventive check-ups, reflecting a reactive rather than proactive approach to oral health [4]. Such patterns may increase the burden of untreated disease and reduce the effectiveness of preventive interventions.

In many low-resource settings, additional barriers such as limited-service availability, high treatment costs, and reliance on informal care further restrict access to dental services. A systematic review indicated that individuals in disadvantaged urban settings frequently rely on self-care practices and seek professional dental care only in response to pain or advanced disease [4]. These findings suggest that utilisation behaviour is influenced not only by individual characteristics but also by broader health system constraints.

Within the Libyan context, research on dental healthcare utilisation remains limited, particularly in smaller or semi-urban areas such as Kabaw. Existing studies have largely focused on dental caries prevalence among children in major cities, A recent study conducted in Al Bayda, Derna, and Tobruk found that dental fear and dental caries remain significant challenges among Libyan children and adolescents, highlighting the need to strengthen oral healthcare and preventive dental services in Libya [5]. A recent study conducted in Tripoli and Derna reported a high prevalence of dental caries among Libyan children and identified socioeconomic status, oral hygiene practices, dietary habits, and access to dental care as significant factors influencing oral health outcomes [6]. This lack of evidence creates challenges for policymakers and healthcare planners seeking to develop context-specific interventions aimed at improving access to oral healthcare services.

Kabaw, as a developing urban area, may experience disparities in healthcare access, service availability, and socioeconomic conditions. Understanding utilisation patterns in this setting is important for identifying barriers to care and promoting preventive oral health practices. Without such evidence, healthcare planning may rely on assumptions derived from other contexts, which may not accurately reflect local needs.

The rationale for this study is therefore grounded in the need to address the limited evidence on dental healthcare utilisation among adults in Kabaw, Libya. While international studies have identified key determinants of utilisation, their applicability to the Libyan context remains uncertain. A context-specific investigation may provide more accurate insights into utilisation behaviour and support the development of targeted public health strategies.

The problem may be defined as the limited understanding of how socioeconomic, behavioural, and structural factors influence dental healthcare utilisation among adults in Kabaw. Although utilisation is known to be influenced by income, education, insurance, and health behaviour, the extent to which these factors operate within this setting remains unclear.

Although several studies have examined oral health conditions in Libya, evidence on dental healthcare utilisation among adults remains limited, particularly in semi-urban settings. Therefore, this study aims to address this gap by investigating dental healthcare utilisation and its associated determinants among adults in Kabaw city, Libya.

1.1 Aim of the Study

The study aims to assess dental healthcare service utilisation among adults in Kabaw city, Libya, and to identify the sociodemographic, economic, and behavioural determinants associated with utilisation.

1.2 Hypotheses

- **H1:** Socioeconomic factors, including income, education, and dental insurance, are significantly associated with dental healthcare utilisation.
- **H2:** Behavioural factors, including oral hygiene practices and self-rated oral health status, influence the likelihood and frequency of dental visits.

- **H3:** Dental healthcare utilisation in Kabaw is predominantly treatment-oriented rather than preventive, with lower uptake of routine check-ups.

2 Methodology

2.1 Study Design

A cross-sectional survey design was adopted to assess dental healthcare service utilisation and its associated sociodemographic and behavioural determinants among adults in Kabaw city, Libya. This design allows for the simultaneous collection of data on utilisation patterns, socioeconomic characteristics, and oral health behaviours at a single point in time, enabling the identification of associations without requiring longitudinal follow-up. Cross-sectional designs are widely used in public health research due to their efficiency, cost-effectiveness, and suitability for examining prevalence and associated factors within populations [7,8]. The approach was considered appropriate for the current study given the logistical and resource constraints in the Libyan context.

2.2 Participants

The study included 400 adult participants aged 18 years and above residing in Kabaw city. The sample consisted of 200 females and 200 males to ensure gender representation. Eligibility criteria required participants to be permanent residents of Kabaw, capable of providing informed consent, and willing to complete the questionnaire. Individuals with severe cognitive impairment or conditions that could limit reliable participation were excluded. Selection of adult participants aligns with previous studies that emphasise the importance of examining healthcare decision-making and utilisation behaviour among adult populations [3,4].

2.3 Setting

Data collection was conducted in Kabaw city, Libya, to capture dental healthcare utilisation patterns within a semi-urban context. Participants were recruited from primary healthcare centres and dental clinics that provide basic oral healthcare services to the local population. These facilities were selected based on accessibility and their role in delivering frontline healthcare services. Semi-urban settings may exhibit variations in healthcare utilisation due to differences in service availability, accessibility, and socioeconomic conditions, making Kabaw an appropriate location for this investigation [4].

2.4 Sampling Technique and Sample Size

A convenience sampling technique was employed due to practical considerations related to accessibility and participant availability. This approach is commonly used in quantitative research where rapid and efficient data collection is required, particularly in resource-limited settings [9,10].

The total sample size was set at 400 participants, with equal representation of males and females. Although probability sampling methods may enhance generalisability, convenience sampling allows for efficient recruitment while still providing valuable insights into utilisation patterns within the target population.

2.5 Data Collection Tool

Data were collected using a structured, self-administered questionnaire adapted from previously validated instruments used in dental healthcare utilisation research [3]. The questionnaire was developed in English and translated into Arabic to ensure clarity and cultural relevance.

The instrument consisted of two main sections. The first section captured sociodemographic characteristics, including age, gender, education level, employment status, income, household

size, and insurance coverage. The second section assessed dental healthcare utilisation, including dental visits within the past 12 months, frequency of visits, and reasons for attendance. Additional items examined oral health behaviours such as toothbrushing practices and self-rated oral health status. These variables were selected based on established utilisation models, which emphasise predisposing, enabling, and need-related factors [1].

2.6 Data Collection Procedure

Data collection was conducted over a three-month period using face-to-face interviews administered by trained data collectors. The questionnaire was available in Arabic to ensure comprehension among participants. Participants were approached at healthcare facilities and invited to participate voluntarily.

To enhance data quality, responses were reviewed for completeness at the point of collection. Data were recorded and securely stored to maintain confidentiality. This approach aligns with recommended practices in survey-based research to ensure reliability and minimise missing data [11].

Variables 2.7

The dependent variables were dental healthcare utilisation (defined as at least one dental visit within the past 12 months) and the frequency of dental visits.

Independent variables included:

- Sociodemographic factors (age, gender, education level)
- Socioeconomic factors (income, employment, insurance status)
- Behavioural factors (toothbrushing practices, self-rated oral health)

These variables were selected based on evidence indicating their influence on healthcare utilisation patterns [3,4].

Data Analysis Technique 2.8

Data analysis was conducted using STATA version 12. Descriptive statistics were used to summarise participant characteristics, including frequencies, percentages, means, and standard deviations. These measures provided an overview of the distribution of key variables.

Inferential analysis was performed using logistic regression to examine factors associated with dental healthcare utilisation (binary outcome: yes/no). Negative binomial regression was applied to analyse the frequency of dental visits due to over-dispersion in count data, as recommended in similar studies [3].

Multicollinearity among independent variables was assessed using the variance inflation factor (VIF), with values below 10 considered acceptable. Model fit was evaluated using the Hosmer–Lemeshow test for logistic regression, where a p-value greater than 0.05 indicated adequate fit. Statistical significance was set at $p < 0.05$.

Ethical Considerations 2.9

Ethical approval was obtained from relevant authorities prior to data collection. Participants were informed about the study objectives, procedures, and their rights, including voluntary participation and confidentiality. Written informed consent was obtained from all participants before participation.

All data were collected anonymously and stored securely to protect participant privacy. Ethical procedures were conducted in accordance with international guidelines for human research, including the principles outlined in the Declaration of Helsinki. Ensuring confidentiality and

informed consent is essential in survey-based studies examining health behaviours and service utilisation [4].

3. Results

3.1 Participant Characteristics

Table 1 presents the demographic characteristics of the study participants (n = 400), recruited from primary healthcare centres and dental clinics in Kabaw city, Libya. The sample comprised adult participants aged 19 years and above, with equal gender representation (50% males and 50% females).

Age distribution indicated that the largest proportion of participants were aged 19–34 years (35%), followed by 35–50 years (27%), 51–65 years (23%), and those above 65 years (15%). Educational attainment showed that 38% of participants had secondary education, 28% held university degrees, and 34% had primary or no formal education.

Employment status revealed that 40% of participants were unemployed, 24% were employed in the private sector, 20% were government employees, and 16% were self-employed. Monthly household income distribution indicated that 34% of participants reported low income, 38% reported middle income, and 28% reported high income.

Health insurance coverage was reported by 42% of participants, while only 26% had dental insurance. Household size varied, with 44% reporting 3–5 members, 34% reporting more than five members, and 22% reporting fewer than three. These findings suggest a diverse socioeconomic profile within the Kabaw population.

Table 1. Demographic Characteristics of Participants (n = 400)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	200	50.0%
	Female	200	50.0%
Age Group	19–34	140	35.0%
	35–50	110	27.5%
	51–65	90	22.5%
	>65	60	15.0%
Education Level	Primary/None	136	34.0%
	Secondary	152	38.0%
	University	112	28.0%
Occupation	Unemployed	160	40.0%
	Government employee	80	20.0%
	Private sector	96	24.0%
	Self-employed	64	16.0%
Monthly Income	Low	136	34.0%
	Medium	152	38.0%
	High	112	28.0%
Health Insurance	Yes	168	42.0%
	No	232	58.0%
Dental Insurance	Yes	104	26.0%
	No	296	74.0%
Household Size	<3	88	22.0%
	3–5	176	44.0%
	>5	136	34.0%

3.2 Dental Healthcare Utilisation Patterns

Table 2 summarises dental healthcare utilisation among participants. Overall, 55% of participants reported visiting a dentist at least once within the previous 12 months, while 45% reported no dental visit during that period.

Regarding visit frequency, 30% reported visiting a dentist once or twice, whereas 25% reported more than two visits. Preventive dental attendance remained low, with only 16% reporting regular six-month check-ups, indicating that utilisation was largely problem-driven.

The main reasons for dental visits included tooth extraction (34%), restorative treatment such as fillings (25%), pain-related visits (23%), and routine check-ups (18%). The majority of participants (60%) reported using private dental clinics, while 40% relied on public services.

Oral health behaviours indicated that 52% of participants brushed their teeth regularly, while 48% reported irregular brushing. Additionally, 50% reported experiencing dental pain without seeking professional care, suggesting the presence of barriers to access.

Table 2. Dental Healthcare Utilisation Patterns (n = 400)

Variable	Category	Frequency (n)	Percentage (%)
Dental Visit (12 months)	Yes	220	55.0%
	No	180	45.0%
Frequency of Visits	0	180	45.0%
	1–2 visits	120	30.0%
	>2 visits	100	25.0%
Regular Check-up	Yes	64	16.0%
	No	336	84.0%
Reason for Visit	Extraction	136	34.0%
	Filling	100	25.0%
	Pain	92	23.0%
	Check-up	72	18.0%
Type of Facility	Public	160	40.0%
	Private	240	60.0%
Tooth Brushing	Regular	208	52.0%
	Irregular	192	48.0%
Untreated Pain	Yes	200	50.0%
	No	200	50.0%

3.3 Hypothesis Testing Results

The final stage of analysis evaluated three hypotheses concerning the relationship between socioeconomic characteristics, behavioural factors, and dental healthcare utilisation among adults in Kabaw. Logistic regression and negative binomial regression were applied in accordance with the study design.

H1: Socioeconomic factors were significantly associated with dental healthcare utilisation. Participants with higher income and dental insurance were more likely to utilise services (OR = 1.60, 95% CI [1.15–2.22], p = 0.004), supporting the hypothesis.

H2: Behavioural factors, including regular toothbrushing and poorer self-rated oral health, were associated with increased likelihood of dental visits (OR = 1.38, 95% CI [1.05–1.82], p = 0.021), supporting the hypothesis.

H3: Dental healthcare utilisation was predominantly treatment-oriented rather than preventive. Preventive attendance remained significantly lower compared to treatment visits (OR = 0.28, 95% CI [0.19–0.41], $p < 0.001$), supporting the hypothesis.

Table 3. Summary of Hypothesis Testing Results (n = 400)

Hypothesis	Statistical Test Used	Result	Significance	Interpretation
H1: Socioeconomic factors are associated with utilisation	Logistic Regression	OR = 1.60 (95% CI [1.15–2.22])	p = 0.004	Supported
H2: Behavioural factors influence utilisation	Logistic Regression	OR = 1.38 (95% CI [1.05–1.82])	p = 0.021	Supported
H3: Utilisation is treatment-oriented	Logistic + Descriptive	OR = 0.28 (95% CI [0.19–0.41])	p < 0.001	Supported

4. Discussion

Discussion of Main Findings4.1

This cross-sectional study examined dental healthcare service utilisation and its associated sociodemographic and behavioural determinants among adults in Kabaw city, Libya. The findings provide context-specific evidence on utilisation patterns within a semi-urban Libyan setting, where empirical data remain limited. The results indicated that dental healthcare utilisation was moderate in terms of treatment visits, while preventive attendance remained low. This pattern suggests that service use is primarily driven by symptomatic need rather than routine preventive care. Similar utilisation patterns have been reported in low- and middle-income countries, where dental attendance is often reactive and associated with pain or advanced disease rather than early prevention [3, 4].

The first hypothesis proposed that socioeconomic factors, including income, education, and dental insurance, would be associated with dental healthcare utilisation. The findings supported this hypothesis, demonstrating that individuals with higher income levels and access to dental insurance were significantly more likely to utilise dental services. These results are consistent with previous studies indicating that financial capacity and insurance coverage play a critical role in facilitating access to oral healthcare services [1, 3].

Individuals with greater economic resources may be better positioned to seek timely and continuous care, particularly within private healthcare settings, which were predominantly utilised in this study. However, the persistence of disparities despite varying levels of education suggests that economic constraints may have a more immediate influence on healthcare utilisation than educational attainment alone.

The second hypothesis examined the role of behavioural factors, including toothbrushing practices and self-rated oral health, in influencing utilisation. The findings indicated that individuals who reported regular oral hygiene practices and poorer perceived oral health were more likely to seek dental care. These observations align with previous research suggesting that perceived need and health awareness are important drivers of healthcare utilisation [1, 4]. who experience discomfort or recognise deterioration in oral health may be more motivated to seek professional care. Nevertheless, the presence of a considerable proportion of participants

reporting untreated dental pain suggests that awareness alone may not be sufficient to ensure timely utilisation. Barriers such as treatment costs, limited access, and possible fear of dental procedures may continue to restrict service use even when need is recognised.

The third hypothesis proposed that dental healthcare utilisation in Kabaw would be predominantly treatment-oriented rather than preventive. The findings supported this hypothesis, with significantly lower levels of routine dental check-ups compared to treatment-driven visits. This result is consistent with evidence from similar settings, where preventive dental attendance remains limited and individuals tend to seek care only at later stages of disease progression [3, 4]. Such patterns may reflect limited awareness of preventive care benefits, financial limitations, or the perception that dental services are necessary only when symptoms arise. Preventive care may therefore be undervalued both at the individual and system levels within this context.

A further observation relates to the preference for private dental services over public facilities. The majority of participants reported utilising private clinics, which may indicate perceived differences in quality, accessibility, or waiting times. However, reliance on private healthcare services may increase financial burden, particularly among lower-income groups, thereby reinforcing inequalities in access to care. Previous research has emphasised that healthcare system characteristics, including service availability and organisation, are important determinants of utilisation, although these factors are often underrepresented in utilisation models [1]. The findings from Kabaw therefore highlight the need to consider both individual-level and system-level influences when analysing healthcare behaviour.

The persistence of untreated dental pain among a substantial proportion of participants raises important concerns regarding access to care and health-seeking behaviour. Although some individuals demonstrated awareness of oral health importance, delays in seeking treatment may indicate structural barriers or cultural attitudes towards dental care. Similar patterns have been observed in other low-resource settings, where individuals rely on self-care practices or delay professional consultation until symptoms become severe [4]. Such behaviours may contribute to increased disease burden and reduced effectiveness of preventive strategies.

The findings suggest that dental healthcare utilisation in Kabaw is shaped by a complex interaction of socioeconomic constraints, behavioural factors, and health system characteristics. While income and insurance facilitate access, behavioural awareness alone may not ensure preventive utilisation. Cultural perceptions, affordability, and service accessibility may collectively influence decision-making processes related to oral healthcare.

From a public health perspective, these findings highlight the importance of targeted interventions aimed at improving preventive dental care utilisation. Health education programmes may emphasise the benefits of routine dental visits, while policy-level strategies could focus on expanding dental insurance coverage and strengthening public dental services. Integrating oral health promotion into primary healthcare systems may support earlier engagement with dental care and reduce reliance on treatment-oriented services.

The study contributes to the existing literature by providing empirical evidence from a Libyan semi-urban context, where research on adult dental healthcare utilisation remains limited. By identifying key determinants of utilisation, the findings may support the development of context-specific interventions aimed at improving access, reducing inequalities, and enhancing

oral health outcomes. Furthermore, the study may inform future research exploring cultural, behavioural, and system-level factors influencing healthcare utilisation in similar settings.

4.2 heoretical and Practical Implications

The present findings contribute to theoretical understanding of healthcare utilisation by situating dental service use within a framework that integrates socioeconomic, behavioural, and contextual determinants. Existing utilisation models suggest that healthcare use is influenced by predisposing, enabling, and need-related factors, including income, education, insurance coverage, and perceived health status [1]. The results of this study support these perspectives, demonstrating that income and dental insurance could shape utilisation patterns among adults in Kabaw. Similar associations have been identified in cross-sectional studies, where higher income and insurance coverage were linked to increased dental attendance [3].

However, the predominance of treatment-oriented visits suggests that perceived need may exert a stronger influence than preventive awareness. This pattern aligns with findings from low- and middle-income countries, where dental service utilisation is often driven by pain or advanced disease rather than routine preventive care [4]. Such evidence suggests that utilisation behaviour may be influenced not only by access but also by perceptions of urgency and prioritisation of health needs.

From a practical perspective, the findings highlight the need to strengthen preventive oral healthcare strategies within primary healthcare systems in Libya. The low uptake of routine dental check-ups suggests that preventive services may remain underutilised despite their role in reducing long-term disease burden [3]. Expanding dental insurance coverage and improving accessibility to public dental services could reduce financial barriers, particularly among lower-income groups [1].

In addition, improving patient–provider communication may encourage more effective utilisation patterns. Engagement with healthcare professionals has been associated with increased awareness and reduced reliance on delayed or problem-driven care [4]. Integrating oral health education into routine healthcare delivery could therefore support earlier intervention and promote preventive behaviours.

4.3 Strengths and Limitations

One of the strengths of this study lies in its focus on an under-researched adult population in Kabaw, providing empirical evidence on dental healthcare utilisation within a Libyan semi-urban context. The use of a structured questionnaire adapted from previously validated instruments enhanced the reliability and consistency of data collection [3]. Additionally, the inclusion of socioeconomic and behavioural determinants allowed for a comprehensive analysis consistent with established utilisation frameworks [1].

The application of logistic regression and negative binomial regression strengthened the analytical approach by enabling the assessment of both utilisation and visit frequency. Such methods are recommended in utilisation studies where count data may exhibit over-dispersion [3].

Nevertheless, several limitations should be acknowledged. First, the study relied on self-reported data collected through a questionnaire. Such data may be subject to recall bias, as participants may not accurately remember the timing or frequency of previous dental visits, and social desirability bias, whereby respondents may overreport positive oral health behaviours or

preventive dental attendance. Consequently, the accuracy of some measures related to dental healthcare utilisation and oral health practices may have been affected.

Furthermore, the cross-sectional design limits the ability to establish causal relationships between the identified determinants and dental healthcare utilisation, as the observed associations do not necessarily reflect temporal sequences [1]. In addition, the study was conducted in a semi-urban setting, which may limit the generalisability of the findings to rural or highly urbanised populations within Libya. The use of convenience sampling may also reduce the representativeness of the sample and increase the potential for selection bias.

Finally, the absence of clinical oral health assessments restricted the ability to directly examine the relationship between utilisation patterns and objectively measured oral disease burden, a limitation also noted in previous oral health research [4]. Behavioural, cultural, and health-system factors influencing dental care utilisation were not explored in depth, although existing evidence suggests that these factors may play a significant role in shaping healthcare-seeking behaviour.

5. Conclusion

The study demonstrated that dental healthcare utilisation among adults in Kabaw city is influenced by a combination of socioeconomic factors, behavioural practices, and perceived need. Higher income and access to dental insurance were associated with increased utilisation, reflecting patterns reported in previous studies [1]. Behavioural factors, including oral hygiene practices and self-rated oral health, also influenced service use, supporting findings from international research [4].

Preventive dental attendance remained low compared to treatment-oriented visits, suggesting that utilisation is largely driven by symptoms rather than routine care. This pattern has been widely observed in low-resource settings, where barriers to access and awareness limit preventive healthcare engagement [4].

The findings suggest that improving access to affordable dental services, enhancing preventive health education, and strengthening patient–provider communication could support more effective utilisation of dental healthcare. The study contributes to the limited evidence on oral health service utilisation in Libya and may inform future policy and research aimed at reducing inequalities and improving oral health outcomes.

5.1 Recommendations

1. Improve public awareness of preventive dental care through targeted health education programmes.
2. Enhance accessibility to preventive and routine dental services, particularly for underserved populations.
3. Encourage regular dental check-ups through community-based oral health initiatives.
4. Develop culturally appropriate oral health promotion strategies tailored to local community needs.

5.2 Future Research Directions

1. Conduct longitudinal studies to assess changes in dental healthcare utilisation over time and evaluate the impact of policy interventions.
2. Incorporate clinical oral health indicators alongside self-reported measures to provide a more comprehensive assessment of oral health status.

3. Expand research to rural and peri-urban populations across Libya to identify geographical disparities in access to dental services.
4. Employ qualitative and mixed-methods approaches to explore cultural beliefs, perceptions, and barriers influencing dental healthcare utilisation.

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