Vol 13, Issue: 01 (S), 2026

ABAAD Journal

ISSN: 2353 – 0030
EISSN: 2602-697X

Oral and Dental Health among Children Aged 5–17 Years in Algeria

صحة الأسنان لدى الاطفال البالغين مابين 5-17 سنة في الجزائر

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Received: 15-02-2026	Accepted: 08-06-2026	Published: 10-06-2026

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Abstract:

this article revolves around the issue of dental health among children in Algeria, based on data from the 2019 Multiple Indicator Cluster Survey, which includes a very important statistical sample distributed across various regions of Algerian territory. The aim of this research paper is to provide a comprehensive description of the main demographic characteristics of the target group, in addition to highlighting the most significant socio-economic disparities that could affect the quality and standard of dental healthcare received by children. For this purpose, logistic analysis was employed, which aims to contribute to identifying the most effective factors in the subject of the study.

Keywords: dental health; oral healthcare; oral and dental disease; children

ملخص:

يتمحور هذا المقال حول مسالة صحة الاسنان لدى الاطفال في الجزائر بالاستناد الى معطيات المسح العنقودي المتعدد المؤشرات لسنة 2019 والذي يشمل عينة احصائية بالغة الاهمية موزعة على مختلف مناطق التراب الجزائري. ان الهدف من هذه الورقة البحثية يتجسد في تقديم وصفا شاملا لأبرز الخصائص الديمغرافية للفئة المستهدفة، اضافة الى تسليط الضوء على اهم التفاوتات ذات الطابع

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الاجتماعي – الاقتصادي والتي من شانها التأثير الى على نوعية وجودة الرعاية الصحية للأسنان التي يتلقاها الاطفال. ومن اجل ذلك تمت الاستعانة بالتحليل اللوجيستي والذي مفاده المساهمة في تحديد العوامل الاكثر فاعلية في الموضوع محل الدراسة.

الكلمات المفتاحية: صحة الأسنان؛ العناية بصحة الفم والأسنان؛ أمراض الفم والأسنان؛ الاطفال.

Introduction

Dental health represents one of the main factors determining individuals' overall well-being and quality of life (World Health Organisation [WHO], 2003]. Oral and dental health constitute a key dimension of the general health discourse. It continues to occupy a fundamental place among the priorities of Algerian public authorities, given that the density of dental surgeons in Algeria was estimated at approximately 1.64 in 2019, reflecting a negative gap of approximately 1.66 points compared with the global level (WHO, 2025).

For several decades, Algeria has achieved a genuine improvement in dental healthcare coverage. In the aftermath of independence, coverage stood at approximately 69,205 inhabitants per dental surgeon. At that time, the number of dental surgeons barely exceeded 151, 115 of whom were foreign nationals. With the beginning of the 1980s, the population-to-dentist ratio declined to 11,038 inhabitants per dental surgeon, a change automatically attributable to the rapid increase in the number of practitioners, which reached approximately 1,691, more than 90% of whom were Algerian nationals (National Office of Statistics [ONS], 2013, p. 113).

This progress continued steadily until 1993, after which a marked decline was observed, mainly due to the wave of physician migration abroad resulting from the problematic conditions that characterised the country during that period. However, from 2006 onwards, the trend increased, with the population-to-dentist ratio reaching approximately 3,457 and subsequently 2,807 inhabitants per dental surgeon in 2019. Notably, the total number of dental surgeons increased by 5,822, increasing from 9,648 to 15,470 between 2006 and 2019 (ONS, 2021, p. 156). The issue of oral and dental health is even more sensitive when it concerns children, as it depends on the awareness of their immediate family environment, particularly that of their parents. Healthy oral hygiene habits are transmitted to children from the earliest years of life and constitute a fundamental pillar of education. This strongly affects a child's future living conditions, not only in medical terms but also in terms of academic performance and social development.

In 2013, the need for conservative oral and dental care was reported to be very high, as dental caries is the most common oral disease among children. The corresponding estimates were approximately 77% among children aged 6 years and 72% to 73% among those aged 12 to 15 years. Moreover, the need for periodontal oral healthcare was estimated to be 46.1%, 63.2%, and 66.6% among children aged 6, 12, and 15 years, respectively. The estimated scaling need was approximately 38.6% (Maatouk et al., 2022, p. 314). The need for oral hygiene education is greater among children aged 15 years (approximately 66.6%), followed by those aged 12 years (63.2%) and then those aged 6 years (46.1%). The need for orthodontic oral healthcare is estimated at 19.8% and 28.7% among children aged 12 and 15 years, respectively (Maatouk et al., 2022, p. 314).

Furthermore, mild or moderate-to-severe malocclusion is more apparent among early adolescents because of the general development of permanent teeth, which coincides with the period of rapid growth, particularly of the face and jaw. The first type of anomaly is estimated at approximately 40% among children aged 12 years and approximately 37% among those aged 15 years. Moreover, the percentage of the second type shows an estimated gap of approximately nine points, with 28.7% and 19.8% reported among children aged 12 and 15 years, respectively. However, malocclusion is less frequently detected in early childhood, with a prevalence of 26.7% among children aged 6 years (Maatouk et al., 2022, p. 313). The persistence of primary dentition characterises this stage of life; consequently, aesthetic dental concerns receive less attention.

Approximately two decades ago, Algeria devoted particular attention to oral and dental health, especially among children, by launching a national programme specifically targeted at the school environment. This programme was implemented within the framework of a collaboration between the Ministry of Health and the Ministry of National Education. It is integrated into the national public health strategy, which primarily aims to strengthen the prevention and treatment of oral and dental diseases among this group, a key age cohort for learning and adopting healthy, sustainable habits, particularly with respect to oral hygiene.

To highlight this public health issue, data from the Multiple Indicator Cluster Survey are an appropriate option, given the richness of information available on the topic through analysis of a large, nationally representative sample. This approach contributes to a clear and in-

depth understanding of the issue while placing particular emphasis on sociodemographic and even geographical disparities. In addition to these descriptive elements, the present study also seeks to identify the main criteria that aim to provide a comprehensive explanation of the essential factors that, in one way or another, determine the quality of children's dental health in Algeria.

This study is primarily based on data from the sixth Multiple Indicator Cluster Survey (MICS6), which was conducted by UNICEF in Algeria in 2019. These data offer a unique opportunity to explore the various determinants and behaviours related to children's dental health. The sample size is estimated at 17,019 children, of whom 47.9% are females (approximately 8,246) and 52.1% are males (approximately 8,964).

The respondents are predominantly in urban areas, accounting for 67.6% (11,639 statistical units), whereas the rural sector accounts for only 32.45% (5,571 respondents). In the same context, the dominant category consists of respondents with primary education, accounting for nearly 44.1% of the total sample. The intermediate level accounts for approximately 33.2%, whereas the preschool and secondary levels account for approximately 11.3% and 10.4%, respectively. This distribution is justified by the age structure of the sample, which shows that the majority of respondents are aged 5-9, with an estimated proportion of 43.9%. The 10—14 age group ranks second at approximately 34.4%, followed by the 15—17 age group at 20.6%.

With respect to mothers' educational attainment, 27.8% are uneducated, whereas those who have reached an intermediate or secondary level account for approximately 25.4% and 20.5% of the total, respectively. Mothers with a primary level of education constitute 17.4% of the sample, whereas the smallest proportion, 8.4%, corresponds to mothers with a university education. Similarly, mothers in paid employment represent a minority in the sample, accounting for approximately 9% (1,541 women).

The distribution of respondents across territorial planning areas reveals significant regional inequalities at the national level. The concentration of respondents is markedly greater on the high plateaus, accounting for 45.8%, followed by the northern region, with approximately 39.1%. In contrast, the southern region records a much more modest proportion, representing only 15.1% of the total number of children surveyed.

In the same vein, the data indicate that 14.3% of the children were victims of an accident considered to be serious, whereas 20.4% reported suffering from functional difficulty. Health

insurance coverage is confirmed for 9,286 respondents (54.6%), whereas 45.3% of the sample has no coverage. This situation may exacerbate financial inequalities in healthcare access and provide valuable insight into the conditions faced by the child population, which shape their daily lives.

Methods and Materials

This study was conducted via SPSS version 21, specifically the MICS6 survey database. To provide a clearer description of the study, the chi-square test of association was applied, a method that allows verification of a statistically significant relationship between two qualitative variables while presenting the distributions of proportions and frequencies from the same sample. The validity of this test is determined by rejecting the null hypothesis, which implies that there is no relationship between the two variables. Consequently, the acceptance of the alternative hypothesis confirms the existence of a statistical dependence, provided that the level of significance is strictly less than .05 (Hamuli & Agbada, 2023).

To strengthen the analysis, multinomial logistic regression was employed, a method aimed at modelling the statistical relationship between a qualitative dependent variable with at least three categories and other independent variables, whether qualitative or quantitative (Bouyer, 2025). This investigation is based on the selection of two variables, whose categories were recoded to simplify the interpretation of the results. The first variable, labelled *dental hygiene*, refers to the regularity of tooth brushing among children and is represented by three categories (no brushing, occasional brushing, and regular brushing). The second variable, designated *dental consultation*, refers to the frequency of dental care use and is grouped into three categories (regular consultation, consultation for pain, and no consultation).

Within the same methodological approach, nonresponses were excluded to ensure the quality and reliability of the data. The independent variables considered include the demographic profile, socioeconomic context, and behavioural factors related to respondents' dental alth.

The results and Discussion

1. Dental Consultation among Children aged 5–17 Years

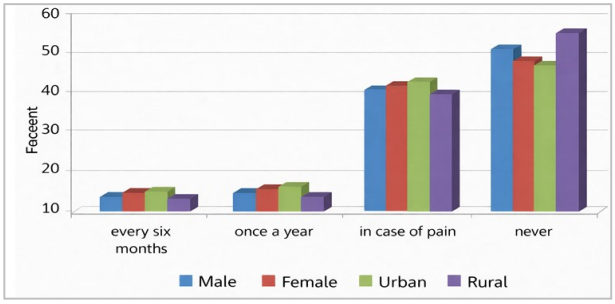
Statistical data on dental consultations reveal a concerning situation and highlight the low

adoption of preventive dental practices. Half of the respondents reported never having undergone a dental consultation, indicating an almost universal absence of dental follow-up. This situation is likely influenced by several socioeconomic or educational factors, such as limited access to care, the cost of dental consultations, or insufficient awareness of the potential impact of dental health problems on a child's future health.

Furthermore, regular dental consultations are observed among only 12.2% of the respondents, including 5% who attend biannual visits and approximately 7.2% who undergo annual consultations. Occasional dental consultations accounted for approximately 36.2% of the sample, as 6237 respondents consulted a dentist only for dental pain.

1.1. Frequency of Dental Consultations According to the Child's Sex and Area of Residence

Figure 1. Distribution of the frequency of dental consultations according to sex and area of residence



Source: Exploitation of the MICS6 database.

The female category is slightly better represented than the male category in regular dental consultations. Four hundred forty-four girls attended dental visits every 6 months, whereas only 409 boys did so. In terms of annual consultations, the difference between the two sexes is approximately 30 individuals: 631 girls and 609 boys. With respect to occasional dental consultations, the behaviour of both sexes is relatively similar: 3,135 boys and 3,102 girls consulted a dentist only for pain.

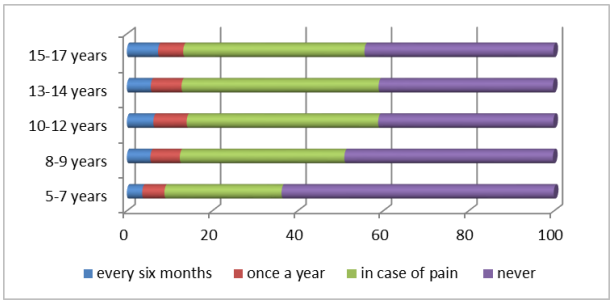
Among children who have never consulted a dentist, the number is greater among males, with approximately 4,719 boys compared with 3,939 girls, resulting in a gap of 780 individuals. This preventive behaviour in favour of females may be attributed to sociocultural factors, as girls tend to pay greater attention to their aesthetic appearance, as well as to specific hormonal changes associated with puberty. Notably, females account for

52.1% of individuals using dentofacial orthopedic .

The examination of the relationship between the frequency of dental consultation and the area of residence revealed notable disparities. Residents in urban areas are significantly more likely to undertake regular dental consultations, with 691 attending biannual visits and approximately 908 attending annual consultations. In contrast, these figures are lower among the rural population: only 486 respondents reported regular consultations, of whom 162 and 324 attended biannual and annual visits, respectively. The number of dental consultations for pain totaled 4,563 among urban residents and 1,674 among rural residents. The application of the chi-square test in this context yields a statistically significant result ($\chi^2 = 332.005$, df = 4, p = .000 < .05). These inequalities are likely linked to the lack of services, practitioners, and oral healthcare infrastructure, whether public or private, in rural areas, in contrast to easier and more rapid access to dental consultations in urban settings, combined with information and awareness campaigns highlighting the importance of oral and dental health. These findings may also be explained by socioeconomic factors, given that approximately 75% of respondents with health insurance reside in urban areas, whereas nearly 57% of rural respondents have no health insurance coverage.

1.2 Frequency of Dental Consultations According to Child Age

Figure 2. ***Distribution of the frequency of dental consultations according to the child's age***



Source: Exploitation of the MICS6 database.

The child's age is one of the The child's age is one of the determinants that significantly influences the frequency of dental consultations. The statistical relationship between these two variables is confirmed by the chi-square test ($\chi^2 = 73.483$, df = 4, p = .000 < .05). Data

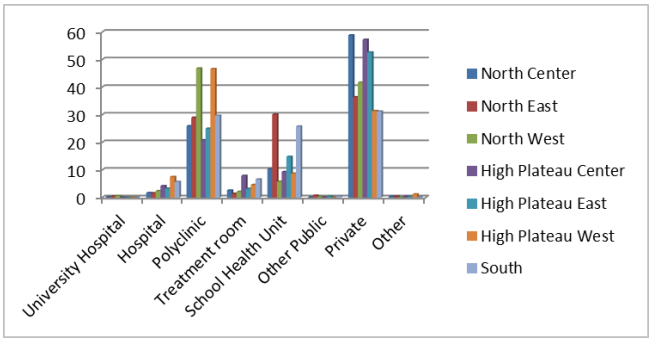
from MICS6 confirm that the total absence of all types of dental consultations follows a downwards trend across age groups, with a notably high number recorded among the youngest children, estimated at 4,453 children aged 5–9 years.

However, this phenomenon is less pronounced among the other age groups, with 2,562 cases among children aged 10–14 years. This number decreases further, reaching 1,643 cases among adolescents aged 15–17 years. The regularity of the frequency of dental consultation was relatively high for the 10–14 age group, with a total of 824 cases, including 323 biannual consultations and 501 annual consultations. Similarly, occasional consultations accounted for approximately 2,522 children who underwent dental examinations only for pain.

Several factors may underlie this observation. This age group often marks the onset of orthodontic treatment, a phase that requires a regular schedule of dental visits to monitor the development and adjustment of the dentition closely.

1.3. Locations of the Most Recent Dental Care According to the Territorial Planning Area

Figure 3. Distribution of the location of the most recent dental consultations according to the territorial planning area



Source: Exploitation of the MICS6 database.

According to the general trend, private dental practices are the primary choice for patients in Algeria, with approximately 2,959 respondents reporting receiving care in this sector. Of these, 1,360 respondents are located in the northern region, and 1,327 are located in the high plateaus. This number is considerably lower in southern Algeria, with approximately 272 patients, a situation attributed to the higher population density in the first two regions and to the limited predominance of the private sector in southern Algeria.

The preference for private dental practitioners in Algeria is generally justified by the rapid access to care and the flexibility of working hours. Many private practitioners schedule appointments according to patients' needs by offering services beyond standard working hours, including evenings, weekends, and public holidays. In addition, other advantages further encourage the choice of the private sector, which provides specialised dental services using modern equipment and new technologies, enabling higher-quality dental care, a comfortable environment, and the establishment of a relationship of trust between the patient and the dentist.

Moreover, a wide range of patients favour polyclinics for their dental consultations, representing a total of 2,664 respondents. Among these, 1,215 patients reside in the northern region, 1,067 in the high plateaus, and approximately 382 in the southern region. This type of healthcare infrastructure is the second most preferred option among patients in Algeria owing to its proximity and population density-based planning. This organisation helps eliminate barriers to travel and ensures easy, equitable access to care for residents in both rural and urban areas, despite the generally affordable or even symbolic cost of consultations.

Furthermore, university hospital centres are the least frequent healthcare facilities for dental consultations in Algeria, with only 15 patients across all geographical regions. Importantly, no positive responses were recorded on the high plateaus in this regard. This situation can be attributed to the limited number of such centres, which do not exceed 14 units at the national level, five of which are located in the capital city. This concentration creates significant constraints, such as long travel distances and extended waiting times for consultations due to overcrowding, making this type of healthcare infrastructure less attractive and encouraging patients to seek other, more efficient alternatives.

2. Dental Hygiene among Children Aged 5–17 Years

2.1. Dental hygiene and demographic profile

Dental hygiene, mainly through tooth brushing, is observed among the majority of children, with 77.4% of respondents, or approximately 13,173 children, reporting it. Although this result reflects a favourable level of awareness and engaged behavior regarding dental health, approximately 22.2% of the valid responses are negative, corresponding to 3,822 children.

These figures are not negligible and highlight risk behaviours that are generally contraindicated for child health.

To further deepen the analysis of the issue under study, it is also appropriate to examine the distribution of this practice by the sex of the child. Tooth brushing as an essential routine is reported by 50.2% of boys, representing approximately 6,614 children, whereas the corresponding figure for girls is estimated at approximately 49.7%, representing a total of 6,559 children.

he bivariate analysis based on the chi-square test applied to the qualitative variables age group and tooth brushing among children confirmed the presence of a statistically significant relationship ($\chi^2 = 292.724$, df = 8, two-sided asymptotic significance < .05). This result highlights the determining role of age in shaping respondents' engagement in tooth brushing practices. Moreover, the total absence of dental hygiene follows a pattern that decreases with increasing age. Children who reported never brushing their teeth accounted for approximately 27% of the 5–9 age group, totaling 2,043 respondents.

This figure decreases to approximately 20.57% among children aged 10–14 years, corresponding to 1,217 children, and then declines further to approximately 15.9% for the 15–17 age group, representing a total of 562 statistical units. This situation is likely explained by increased autonomy with age and by greater awareness of the importance of dental hygiene and its impact on physical appearance, particularly among adolescents.

Continuing along the same analytical line, adherence to regular dental hygiene is observed among 35% of surveyed children in the 5–9 age group, corresponding to an estimated total of 2,676 respondents, of whom 1,260 brush their teeth at least twice per day. In contrast, 1,416 children brushed only once per day. For the same age group, 37% of the respondents, representing 2,824 children, practised occasional tooth brushing.

Approximately 40% of respondents aged 10–14 years maintain daily dental hygiene routines, corresponding to 2,375 children. Among these, 1,128 individuals practised tooth brushing at least twice per day, whereas 1,247 respondents practised it once per day. Among adolescents aged 15–17 years, approximately 49% reported daily dental hygiene, including 896 individuals who brushed at least twice per day and approximately 857 who limited themselves to a single daily brush.

In contrast, irregular dental hygiene is observed in approximately 39.2% of children aged 10–14 years. This proportion decreases by approximately 4.7 percentage points among

those aged 15–17 years, reaching 34.5% of the respondents. Notably, despite improvements with age, irregular dental hygiene still affects more than one-third of children. This statistical finding may be explained by insufficient parental supervision, as well as by constraints such as the lack of school-based programmes addressing the risks associated with neglecting oral and dental hygiene and other socioeconomic constraints.

The area of residence significantly influences dental hygiene practices. Tooth brushing was maintained by 11,491 children residing in urban areas, representing 73.5% of the total sample, whereas only 3,484 children living in rural areas accounted for 26.5% of the surveyed population. The difference observed between the two settings is supported by the chi-square test (χ^2 = 1,069, df = 4, $p < .05$), which indicates a statistically significant association between the variables.

From the same perspective, regular oral hygiene accounts for 45.6% of the total urban population, corresponding to 5,239 respondents, of whom 2,661 children follow a minimum twice-daily brushing routine. In contrast, 2,578 children brush their teeth only once per day, a behavior that falls short of the recommended standards for maintaining dental health. Furthermore, within this same residential setting, approximately 16.6% of the respondents (1,918 children) practised dental hygiene occasionally.

Among respondents living in rural areas, the majority of children (71.7%, or 3,938) do not adhere to basic dental hygiene measures. Of these, 1,918 children maintained insufficient dental hygiene and brushed only occasionally, whereas 2,020 respondents never adopted any dental hygiene routine. This disparity between the two settings reveals a profound imbalance in the organisation of awareness-raising campaigns, which are predominantly concentrated in urban areas, and in the availability of dental hygiene products, with faster, easier access in urban zones. In this context, toothpaste use reached 74.4% in urban areas, corresponding to 9,493 children, whereas it reached 25.57% in rural areas, representing 3,262 statistical units.

In addition, the impact of the household living standards to which the child belongs should be highlighted. The cross-tabulation between the household well-being quintile and area of residence reveals an intense concentration of poverty in rural areas, with 71.3% of respondents (2,745) in the lowest quintile. Conversely, wealth is far more prevalent in urban

settings, where the richest quintile accounts for approximately 95% of respondents, or approximately 2,905.

In terms of territorial planning, respondents from northern Algeria are the most attentive to regular dental hygiene, with a proportion of 48.8%, corresponding to 3,319 individuals, including 1,210 in the North Central Region, 1,085 in Northeast, and 1,004 in Northwest. The absence of tooth brushing among residents of the high plateaus accounts for approximately 60.6% of the respondents, totalling 2,315 and 952 of whom are located in the central area.

This hygienic neglect manifests as school absenteeism due to dental pain, which is more frequently observed among children from the High plateaus than in other territorial areas, with approximately 38.6% (194 recorded cases). Such pain disrupts children's concentration and leads to a decline in their learning and academic attainment. This phenomenon can be explained by the financial precariousness experienced by half of the respondents residing in the high plateaus, while the wealthiest respondents are concentrated in the northern region.

By way of comparison, the southern region records the lowest proportions: regular tooth brushing accounts for 15.2% (1,033 respondents), whereas occasional brushing accounts for 14% (893 respondents). In contrast, 16.9% of the 645 respondents reported the complete absence of tooth brushing.

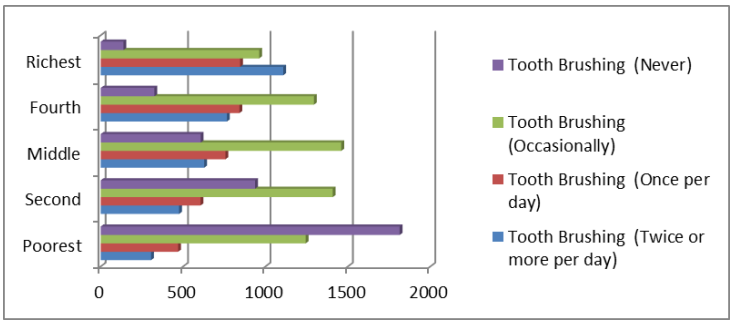
Table 1. Dental hygiene among children according to demographic characteristics

Variables		Dental hygiene			Total
		Regular	Occasional	Never	
Sex	Girls	3676	2883	1565	8124
	Boys	3129	3485	2257	8871
Age group	5-9 years	2676	2824	2043	7543
	10-14 years	2375	2324	1217	5916
	15- 17 years	1753	1219	562	3534
Place of residence	Urban	5239	4450	1802	11491
	Rural	1566	1918	2020	5504
Territorial programming area	North	3319	2454	862	6635
	High plateau	2453	3021	2315	7789
	South	1033	893	645	2571

Source: Exploitation of the MICS6 database

2.2. Dental Hygiene and Economic Profile

Figure 5. Distribution of tooth brushing frequency among children according to household well-being



Source: Exploitation of the MICS6 database.

The absence of dental hygiene is markedly more pronounced among economically disadvantaged respondents, accounting for 47.5% (1,814 children). Consequently, regular tooth brushing is marginalised, with an estimated proportion of only 11.4% (776 statistical units). Several factors may explain this situation: the poorest households are often confronted with survival challenges and often consider dental hygiene a secondary burden. In contrast, children with good dental hygiene habits originated predominantly from the most affluent households, with a proportion of 28.7%. Tooth brushing neglect does not exceed 3.6% among respondents in the wealthiest quintile, where higher living standards, financial, material, and informational, allow greater importance to be accorded to oral and dental hygiene. In line with these findings, the results indicate a gradual relationship between respondents' economic status and toothpaste use. The use of toothpaste is approximately 14%, corresponding to 1,804 children in the poorest quintile, compared with approximately 23% among 2,902 respondents in the wealthiest households.

Conversely, more than half of those who use water for dental hygiene are from low-income backgrounds. This inadequate practice decreases with improvements in economic status, with a proportion of approximately 3.73% among the wealthiest quintile, corresponding to 13 respondents.

The personal ownership of a toothbrush, which constitutes an indispensable tool for dental hygiene, notably increases as household economic status improves. In the poorest quintile, only 1,817 children have their own toothbrushes, representing approximately 14% of the respondents in this group, whereas 111 children share a toothbrush with other family members. Individual use is almost universal among the wealthiest households, reaching approximately 99.7%, corresponding to 2,906 children. This disparity clearly reflects the decisive impact of economic status on dental health, as low-income populations face limited access to hygiene products owing to their high cost relative to household budgets.

3. Multinomial logistic regression analysis of oral and dental health among children in Algeria

3.1. Dental hygiene

Table2. *Model fit information*

Model	Model Fit Criteria			Likelihood Ratio Tests		
	AIC	BIC	−2 Log Likelihood	Chi-square	Degrees of freedom	Sig
Final	1993.969	2453.782	1805.969	249.648	92	0.000

Source: Calculations based on the MICS6 database

At the overall level, the results indicate a statistically significant multinomial logistic model, as the likelihood ratio test reports a chi-square value of $\chi^2 = 249.648$, df = 92, $p < .001$. This confirms that the set of independent variables included in the model substantially improves the model's ability to explain the dependent variable (dental hygiene). Notably, the information criteria are presented for descriptive purposes, with AIC (1993.969) and BIC (2453.782) values suggesting an acceptable trade-off between model fit quality and model complexity. Furthermore, the observed decrease in the −2 log likelihood value, from 2055.618 for the null model to 1805.969 for the final model, highlights the relevance and adequacy of the logistic model.

Table3.Goodness-of-fit indicators and coefficients of determination

Goodness of fit			
Indicator	Value	Degrees of freedom	Sig
Pearson	1962.263	1870	0.067
Deviance	1805.969	1870	0.853

Pseudo R-deux	
Indicator	Value
Cox et Snell	0.224
Nagelkerke	0.256
McFadden	0.121

Source: Calculations based on the MICS6 database

The results of the Pearson test (p = .067) and the deviance test (p = .853) indicate that the multinomial logistic model fits the observed data adequately. This finding supports the relevance of analysing the determinants of the polytomous variable (dental hygiene) via MICS6 data. With respect to the pseudo R^2 indicators, the reported values indicate that the model explains between 22% and 26% of the variance in the dental hygiene variable, according to the Cox and Snell and Nagelkerke measures. In the same context, it should be noted that despite the relatively low value of McFadden's index (.121), it remains consistent with the general standards for multinomial logistic models used in the social sciences. These findings confirm the model's validity for analysing the multiple determinants of dental health practices among children in Algeria.

Table 4. Significant variables associated with children's dental hygiene

Variable	Category	OR (Exp(B))	95% CI	p-value
BDH2	0	328 428.024	6,91E-195 – 1,56E+205	0,003
BDH4	1	0.336	0,215 – 0,525	<0,001
BDH6	1	3.019	1,248 – 7,299	0,014
HL4	1	2.503	1,723 – 3,636	<0,001
HH7	2	0.298	0,133 – 0,665	0,003
HH7	3	0.316	0,145 – 0,690	0,004
HH7	6	0.365	0,150 – 0,891	0,027
windex5	1	3.446	1,373 – 8,650	0,008
windex5	2	2.906	1,452 – 5,816	0,003
windex5	3	2.173	1,237 – 3,820	0,007

Source: Calculations based on the MICS6 database

The results indicate that several variables are significantly associated with dental hygiene, notably, the child's use of a toothbrush (BDH2), the frequency of dental consultations (BDH4), the perceived impact of dental caries on health (BDH6), the child's sex (HL4), the territorial programming area (HH7), and the household well-being quintile (windex5). These factors contribute substantially to explaining variations in the dental hygiene variable among children. In addition, the model retains other no significant independent variables to control for potential confounding factors and for theoretical considerations.

3.2. Dental Consultations

Table 5. *Model fit information*

Model	Model Fit Criteria			Likelihood Ratio Tests		
	AIC	BIC	−2 Log Likelihood	Chi-square	Degrees of freedom	Sig
Final	980.05	1214.848	884.050	232.091	47	0.000

Source: Calculations based on the MICS6 database

The overall interpretation of the results indicates a satisfactory fit of the logistic model to the data, allowing a reliable analysis of the determinants of the dental consultation variable. The statistical significance of the model is confirmed by the likelihood ratio test ($\chi^2 = 232.091$, df = 47, $p < .001$), indicating that the set of independent variables significantly explains dental care use among the study population. In addition, the selected model is supported by the AIC (980.05) and BIC (1214.848) criteria. The −2 log-likelihood value (884.050) further confirms an improvement in model fit relative to the null model.

Table 6. Goodness-of-fit indicators and pseudo R^2 measures of the model

Goodness of fit			
Indicator	Value	Degrees of freedom	Sig
Pearson	987.248	933	0.106
Deviance	882.663	933	0.879
Pseudo R^2			
Indicator	Value		
Cox et Snell	0.210		
Nagelkerke	0.310		
McFadden	0.208		

Source: Calculations based on the MICS6 database

The values of the Pearson test (χ^2 = 987.248, df = 933, p = .106) and the deviance test (χ^2 = 882.663, df = 933, p = .879) indicate that the multinomial logistic regression model fits the data well. Consequently, this model is appropriate for analysing the relationships among explanatory variables influencing dental consultation.

With respect to the pseudo R^2 values of the multinomial logistic regression model, the Cox and Snell and McFadden R^2 measures indicate that the model explains approximately 21% of the variation in the dependent variable. In contrast, the Nagelkerke R^2 suggests that up to 31% of this variance can be explained by the variables included in the model.

Table 7. Significant Variables Associated with the Frequency of Dental Consultations among Children

Variable	Category	OR (Exp(B))	95% CI	p-value
HH7	1	0.477	[0.255 – 0.893]	0.021
HH7	3	0.193	[0.098 – 0.380]	< 0.001
HH7	4	0.342	[0.177 – 0.663]	< 0.001
HH7	5	0.316	[0.169 – 0.593]	< 0.001
HH7	6	0.419	[0.201 – 0.872]	0.020
BDH7	yes (1)	7.506	[3.409 – 16.525]	< 0.001
BDH9	2	0.534	[0.318 – 0.898]	0.018
BDH1	0	0.323	[0.207 – 0.504]	< 0.001
BDH1	1	0.440	[0.279 – 0.692]	< 0.001

Source: Calculations based on the MICS6 database

The variable related to the use of a functional orthodontic appliance (BDH7) was strongly positively associated with the dependent variable, dental consultation. Children for whom this modality is reported as "yes" have a significantly greater probability of consulting a dentist (OR = 7.506; 95% CI [3.409–16.525]; p < .001). This result reflects the extent to which children's oral and dental health is taken seriously within the household. This concern is generally influenced by parental educational attainment and socioeconomic status.

The modalities 0 (never) and 1 (occasionally) of the independent variable, dental hygiene (BDH1), are associated with lower probabilities of dental consultation (OR = 0.323 and OR =

0.440, respectively; $p < .001$). This finding suggests that certain aspects related to the child's family environment may constitute barriers to accessing dental care, thereby contributing to the persistence of inequalities in children's oral and dental health in Algeria. Compared with the reference category, the territorial programming area variable (HH7) is associated with a lower probability of utilising dental consultations across all the modalities considered. This finding indicates that specific household characteristics, such as socioeconomic status or household size, may influence the frequency of dental consultation and further exacerbate social inequalities in access to dental care.

Conclusion

Oral hygiene practices and the frequency of dental consultations among children in Algeria are strongly associated with household socioeconomic and demographic profiles.

Significant inequalities are observed across household well-being quintiles, highlighting the urgent need to implement public policies in child dental health that specifically target economically vulnerable populations.

Regular dental consultation is more common among females, who account for more than half of the beneficiaries of orthodontic care. Cultural factors and prevailing traditions within Algerian society may influence this greater attention afforded to girls.

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