

# Dental erosion in groups of Yemeni children and adolescents and the modification of an erosion partial recording system

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**Background.** The prevalence of dental erosion is rising especially among children and adolescents and its grading needs further investigation.

**Aims.** To determine the prevalence and severity of dental erosion in groups of Yemeni children and adolescents, and to clinically compare an erosion partial recording system (EPRS) with a proposed modified-simplified version (EPRS-M).

**Design.** Of 6163 individuals aged 5–6, 13–14 and 18–19 years, 911 were randomly selected, of which 668 participated in the study. Dental erosion was graded using EPRS. EPRS-M was proposed, and its sensitivity and specificity was calculated in relation to EPRS.

**Results.** Prevalence of erosion extending into dentine on at least one tooth was 6.8% among 5- to 6-year-olds, 3.0% among 13- to 14-year-olds and 14.6% among 18- to 19-year olds. The highest prevalence was 19.2% among girls aged 18–19 years which was significantly higher than boys (10.4%) in the same age group ( $P = 0.044$ ). Sensitivity and specificity for EPRS-M in relation to EPRS were 85.7% and 100% for primary teeth, and 84.1% and 100% for permanent teeth.

**Conclusions.** Dental erosion was common among children and older teenagers and highest among older girls but less common among younger teenagers. The tested accuracy of EPRS-M qualifies it to be used as an initial quick detection tool in future dental erosion research.

## Introduction

The scientific community has given dental erosion greater attention during the last two decades than previously. Studies have shown an association between its occurrence and changes in lifestyle and especially dietary habits<sup>1,2</sup>.

In both developed and developing countries as well as in different age groups, varied prevalence rates of dental erosion have been reported. Among 3- to 6-year-olds, erosive lesions extending into dentine ranged from 1 to 34%<sup>3–5</sup>, and among 12- to 14-year-olds, the range was 1–53%<sup>3,4,6,7</sup>. Studies that recruited older participants aged 18–21 years have reported prevalence rates of erosion into dentine to be 13–22%<sup>4,8</sup>. Thus, dental erosion is not uncommon and dental practitioners who treat children and adolescents would

frequently be expected to deal with dental erosion cases in their clinical practice.

While a clear majority of these studies reported higher prevalence of dental erosion among boys<sup>3,6,8</sup>, some studies found the prevalence to be greater among girls<sup>5,9</sup>. On the other hand, a study conducted in Brazil reported no significant difference in the prevalence of dental erosion between boys and girls aged 15–19 years<sup>10</sup>.

Researchers have applied different indices for grading the severity of dental erosion using both full mouth recording<sup>11</sup> and partial recording utilizing marker teeth<sup>3,4</sup>. In the clinical as well as the research setting, the available time for the clinical examination is often short which necessitates the availability of an easily used and time-efficient method for the assessment of dental erosion.

In spite of improvements in knowledge, much remains unknown or unresolved as regards dental erosion in general. In regard to its occurrence across different regions of the world, information is sparse and there are no previous data about the prevalence of dental erosion from Yemen. In addition, a recent

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study among Yemeni dental professionals and dental students in Sanaa showed that the awareness of dental erosion is low<sup>12</sup>.

Therefore, the aim of this study was to investigate the prevalence and severity of dental erosion in three groups of Yemeni children and adolescents, and to clinically compare an erosion partial recording system (EPRS) with a proposed modified version (EPRS-M). It was hypothesized that dental erosion would be common among children and adolescents and more so among boys, and that a reduced number of erosion marker teeth would reasonably reflect the individual's erosion severity.

## Materials and methods

The study was conducted at the University of Science and Technology – Dental College (UST-DC), Sanaa, Yemen.

### Selection of subjects

The sampling frame comprised all children and adolescents aged 5–6, 13–14 and 18–19 years who visited UST-DC in the period from September 2012 to June 2013 ( $N = 6163$ ). Sample size calculations were based on simple random sampling and were performed for each age group separately by assuming a prevalence of dental erosion extending into dentine of 15% in the 5- to 6-years and 13- to 14-years age groups and 20% in the 18- to 19-years age group with precision of 0.05 and design effect of 1. The assumed percentages were based on the mean of percentages from other countries that ranged from 1 to 34%<sup>3–6,13–16</sup>, because there is no previous study on erosion from Yemen. Therefore, a minimum number of 196, 196 and 246 individuals were required for the ages 5–6, 13–14 and 18–19 years, respectively. According to the sample size estimation and using a computer, three random samples were drawn comprising 5–6 years ( $n = 280$ ), 13–14 years ( $n = 280$ ) and 18–19 years ( $n = 351$ ) groups, with a total of 911 individuals. The parents of enrolled children and the adolescents were contacted by phone and invited to come for a check-up

appointment and participate in the study. A total of 668 accepted to participate with 51.6% being males. Of those, 206 children were in the 5- to 6-years age group, 202 in the 13- to 14-years age group and 260 in the 18- to 19-years age group. Those who accepted to participate were scheduled for clinical examination during the period from October 2013 to June 2014.

### Clinical examination and calibration

All clinical examinations were conducted by the principal investigator (AA). Calibration for dental erosion was carried out before the start of the study with a more experienced researcher (AKJ) and consisted of in-office three repeated examinations of 95 dental casts followed by clinical examinations of children and adolescents ( $n = 37$ ) at the Department of Clinical Dentistry, University of Bergen and UST-DC. Intra-examiner agreement for AA and inter-examiner agreement between AA and AKJ were tested at tooth surface level after performing two successive blind assessments with an interval of 3 weeks on 23 randomly selected casts with a total of 368 tooth surfaces.

### Assessment of dental erosion on anterior and posterior teeth

Clinical examination was performed in a modern, standard dental clinical setting. Dental erosion was graded first with a partial recording system on the buccal and palatal surfaces of all maxillary anterior teeth, (13–23 or 53–63, totally 12 tooth surfaces) using the scale of Johansson *et al.*<sup>13</sup> (Table 1). Dental erosion was then graded on occlusal surfaces/cupings of all first permanent molars or all primary molars, totally four permanent or eight primary tooth surfaces, using the scale of Hasselkvist *et al.*<sup>4</sup> (Table 2).

### Dental erosion by the EPRS

The two scales on anterior and posterior teeth (Tables 1 and 2) were combined into one scale according to Hasselkvist *et al.* (2016)<sup>17</sup> (Table 3) to form the 'EPRS' and technically

**Table 1. Ordinal scale for grading severity of dental erosion on buccal and palatal surfaces of maxillary anterior teeth<sup>13</sup>.**

Grade	Criteria
0	No visible changes, developmental structures remain, macro-morphology intact
1	Smoothed enamel. Developing structures have vanished completely or partially. Enamel surface is shiny, matt, irregular, 'melted', rounded or flat. Macro-morphology generally intact
2	Enamel surface as described in grade 1. Macro-morphology clearly changed. Faceting or concavity formation within the enamel. No dentinal exposure
3	Enamel surface as described in grades 1 and 2. Macro-morphology greatly changed (close to dentinal exposure of large surfaces) or dentin surface exposed by $\leq 1/3$
4	Enamel surface as described in grades 1, 2 and 3. Dentin surface exposed by $>1/3$ or pulp visible through the dentine

Approximal erosion and presence of 'shoulder' should be recorded.

**Table 2. Ordinal scale for grading cuppings on occlusal surfaces of first permanent molars and all primary molars<sup>4</sup>.**

Grade	Criteria
0	No cupping/intact cusp tip
1	Rounded cusp tip*
2	Cupping $\leq 1$ mm
3	Cupping $> 1$ mm
4	Fused cuppings: at least two cuppings are fused together on the same tooth

\*Changed morphology compared to the assumed original anatomy at the time of eruption.

using the same clinical registrations as above. In this system, the highest recorded grade for erosion on maxillary anterior teeth and cuppings on molars was used to classify the cases into: no erosion (grade 0); mild erosion (grade 1); moderate erosion (grade 2); severe erosion (grade 3); and very severe erosion (grade 4) (Table 3). The marker teeth surfaces used in EPRS include buccal and palatal surfaces of maxillary anterior teeth (tooth number 13–23 or 53–63) and occlusal surfaces of molars (tooth number 16, 26, 36, 46 or 54, 55, 64, 65, 74, 75, 84, 85) which comprise 16 permanent and 20 primary teeth surfaces, respectively. According to this system, a case would, for example, be classified as having severe erosion (grade 3) if the maximum recorded erosion grade on all maxillary anterior teeth or cupping grade on molars was 3 with the rest of recordings being 3 or less.

### *Dental erosion by the modified erosion partial recording system*

The modified erosion partial recording system (EPRS-M) is proposed in this article as a further simplification of EPRS and utilizes the same erosion scale (Table 3) but on different marker teeth surfaces. EPRS-M was calculated using the earlier recorded clinical erosion registrations. In the permanent dentition, EPRS-M utilizes the highest grade recorded from the buccal and palatal surfaces of

**Table 3. The scale of the 'erosion partial recording system' (EPRS) on the anterior and posterior teeth<sup>17</sup>.**

Grade	Severity	Teeth	Criteria
0	No erosion	Anterior teeth Molars	No visible changes, developmental structures remain, macro-morphology intact No cupping/intact cusp tip
1	Mild erosion	Anterior teeth Molars	Smoothed enamel. Developing structures have vanished completely or partially. Enamel surface is shiny, matt, irregular, 'melted', rounded or flat. Macro-morphology generally intact Rounded cusp tip*
2	Moderate erosion	Anterior teeth Molars	Enamel surface as described in grade 1. Macro-morphology clearly changed. Faceting or concavity formation within the enamel. No dentinal exposure Cupping $\leq 1$ mm
3	Severe erosion	Anterior teeth Molars	Enamel surface as described in grades 1 and 2. Macro-morphology greatly changed (close to dentinal exposure of large surfaces) or dentin surface exposed by $\leq 1/3$ Cupping $> 1$ mm
4	Very severe erosion	Anterior teeth Molars	Enamel surface as described in grades 1, 2 and 3. Dentin surface exposed by $>1/3$ or pulp visible through the dentine Fused cuppings: at least two cuppings are fused together on the same tooth

\*Changed morphology compared to the assumed original anatomy at the time of eruption.

maxillary central incisors and the occlusal surfaces of mandibular first molars (tooth number 11, 21, 36, 46), thus in total six surfaces. On primary teeth, EPRS-M utilizes the highest grade recorded on the buccal and palatal surfaces of maxillary central incisors and all first molars (tooth number 51, 61, 54, 64, 74 and 84), in total eight surfaces.

In all erosion registrations, tooth surfaces that were clinically impossible to grade, for example missing or with large restorations/caries, were excluded. After clinical examination, the results of the oral health examination were conveyed to the parent/participant and any necessary preventive advice was given. Necessary further treatment was provided free of charge by scheduling the participant for another appointment.

### *Ethical considerations*

The study protocol was approved by the Regional Committee for Medical and Health Research Ethics, Western Norway (Ref. 2013/981/REK Vest) and the Research Ethical Committee at the Faculty of Dentistry, UST in Yemen (Ref. 10/2013). Participation in the study was voluntary and without any compensation. An informed consent was signed by all participants or their parents/guardians before conducting the study.

### *Statistical analysis*

The study data were analyzed using SPSS version 22 (IBM Corporation, Armonk, NY, USA). Response rates and gender distribution were calculated. Inter- and intra-examiner concordances between the researchers were tested by percentage agreement and Cohen's kappa. Descriptive statistics were conducted to assess percentage distribution of recorded dental erosion grades. Chi-square test was used to compare between groups. Spearman's correlation was used to assess the correlation between the severity of erosion and other variables. McNemar's test was used to compare between prevalence of advanced erosive lesions obtained by EPRS and EPRS-M. Statistical significance was set at  $P < 0.05$ .

The 'EPRS' (Table 3) was used to determine the prevalence of severe/very severe dental erosion at the individual level and at surface level. EPRS-M, which is proposed as a simplification of the above-mentioned EPRS, was calculated. Sensitivity and specificity of EPRS-M were calculated by cross-tabulation in relation to the EPRS.

### **Results**

The overall participation rate in the study was 73.3% (668/911 individuals). The dropout was 243 individuals and for the following reasons: did not show up for their appointment ( $n = 63$ ), being sick ( $n = 9$ ), time constraints ( $n = 102$ ), not signing the consent ( $n = 45$ ), was away on travel ( $n = 24$ ).

Intra-examiner concordance and Cohen's kappa for all examined tooth surfaces during the calibration were 81.7% and 0.70%, respectively. The inter-examiner concordance and corresponding Cohen's kappa were 76.4% and 0.66%, respectively. The deviations in all cases of disagreement were one scale unit except in one case where it was two scale units. The disagreements were only in mild and moderate enamel erosion (grades 1 and 2).

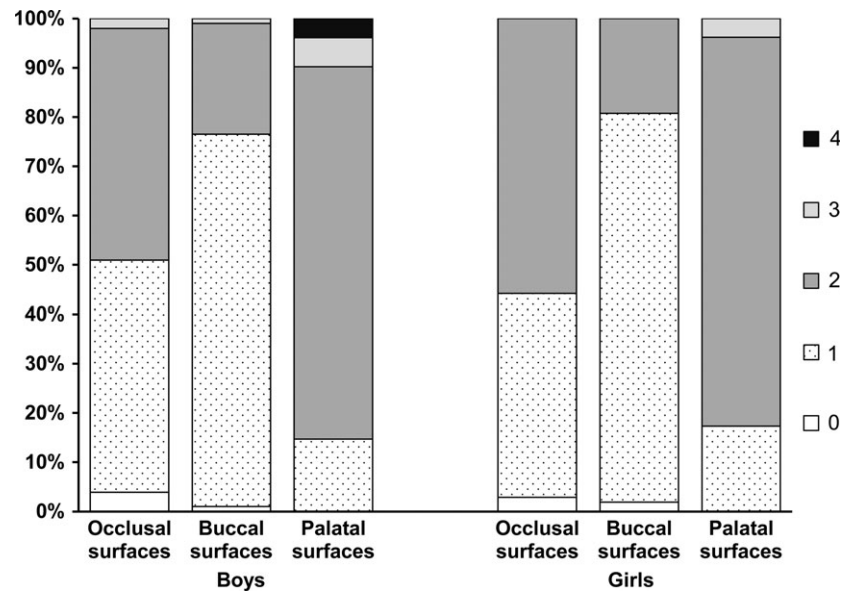
### *Clinical examination*

*Dental erosion on anterior and posterior teeth.* The percentage distribution of erosion grades on all buccal and palatal surfaces of maxillary anterior teeth in the three age groups are illustrated in Figs 1–3. In all three groups, the palatal surfaces of anterior teeth were the only surfaces affected by very severe erosion (grade 4), while severe erosion (grade 3) was the highest grade seen on the buccal surfaces of maxillary anterior teeth (Table 3).

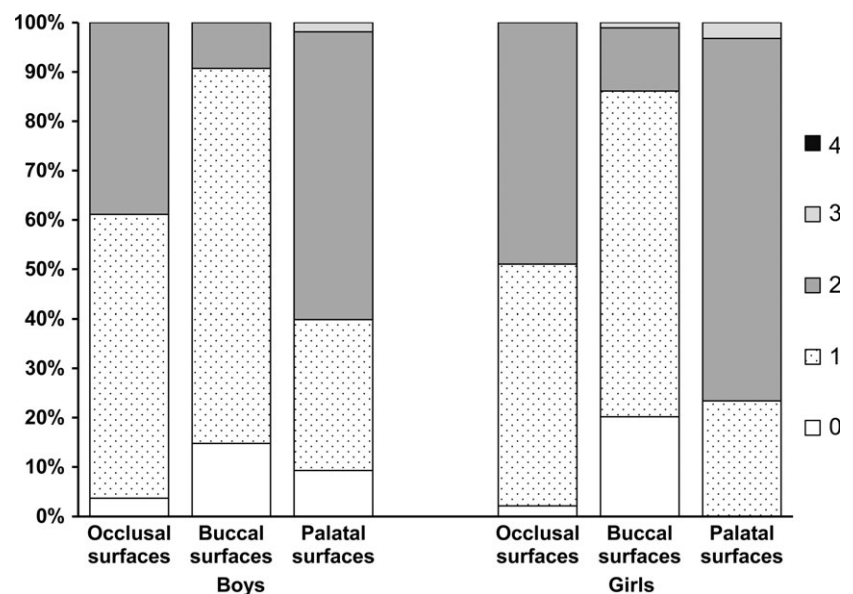
Distribution of cuppings on occlusal surfaces of first permanent molars and all primary molars in all age groups is shown in Figs 1–3. The highest cupping grade found in all age groups was grade 3 (severe erosion) (Table 3). There was a statistically significant but weak positive correlation between the mean erosion grade on maxillary anterior



**Fig. 1.** Percentage distribution of the erosion grades (Table 1) on buccal and palatal surfaces of primary maxillary anterior teeth and occlusal surfaces of primary molars (Table 2) among boys and girls in the 5- to 6-years age group ( $n = 206$ ).



**Fig. 2.** Percentage distribution of the erosion grades (Table 1) on buccal and palatal surfaces of permanent maxillary anterior teeth and occlusal surfaces of permanent first molars (Table 2) among boys and girls in the 13- to 14-years age group ( $n = 202$ ).



teeth and mean cuppings grade on primary molars ( $r = 0.14$ ,  $P = 0.039$ ) in the 5- to 6-years age group, but not so with the permanent molars in the 13- to 14-years and 18- to 19-years age groups.

*Dental erosion by EPRS.* Using EPRS, the prevalence of advanced erosive lesions (severe and very severe erosion; grades 3 and 4) (Table 3) at the individual level among all participants was 8.7%, while at the level of age groups it was 6.8% among 5- to 6-year-olds, 3.0% among 13- to 14-year-olds and

14.6% among 18- to 19-year-olds. The distribution of erosion grades among boys and girls separately in the three age groups is illustrated in Fig. 4. Girls in the 18- to 19-years age group had the highest prevalence of advanced erosive lesions according to EPRS (19.2%, Fig. 4), and this was significantly higher than in boys (10.4%) in the same age group ( $P = 0.044$ ). There were no significant differences between boys and girls in the prevalence of advanced erosive lesions in the 5- to 6-years and 13- to 14-years age groups. The prevalence of mild and moderate erosion,

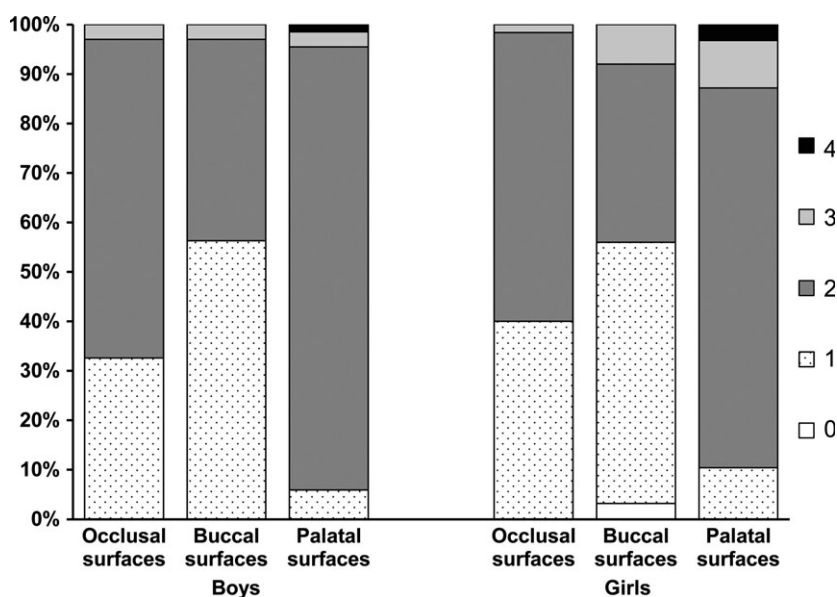


Fig. 3. Percentage distribution of the erosion grades (Table 1) on buccal and lingual surfaces of permanent maxillary anterior teeth and occlusal surfaces of permanent first molars (Table 2) among boys and girls in the 18- to 19-years age group ( $n = 260$ ).

that is within enamel (grades 1 and 2; Table 3; Fig. 4), was at individual level among all participants 91.3%, while at the level of age groups it was 93.2% among 5- to 6-year-olds, 97.0% among 13- to 14-year-olds and 85.4% among 18- to 19-year-olds.

At surface level, of all erosion graded teeth surfaces ( $n = 11,372$ ), there were 2040 surfaces (17.9%) with grade 0 erosion, 6077 surfaces (53.4%) with grade 1 erosion, 3091 surfaces (27.2%) with grade 2 erosion, 136 surfaces (1.2%) with grade 3 erosion and 28 surfaces (0.25%) with grade 4 erosion.

**Dental erosion by EPRS-M.** In addition to calculation of the prevalence of advanced erosive lesions by EPRS, the prevalence was also calculated by EPRS-M for the purpose of comparison. Using EPRS-M, the overall prevalence of severe/very severe erosion was 7.3%, while at the level of age groups it was 5.8% among 5- to 6-year-olds, 3% among 13- to 14-year-olds and 11.9% among 18- to 19-year-olds. The distribution of erosion grades among boys and girls separately in the three age groups by EPRS-M is illustrated in Fig. 5. A comparison between the prevalence figures of advanced erosive lesions obtained by EPRS and those obtained by EPRS-M is presented in Table 4. There were no significant differences between

prevalence figures obtained by EPRS and EPRS-M among boys and girls in the three age groups (Table 4). Sensitivity and specificity of EPRS-M in predicting prevalence of severe/very severe erosion in relation to EPRS were 85.7% and 100% for primary teeth, and 84.1% and 100% for permanent teeth.

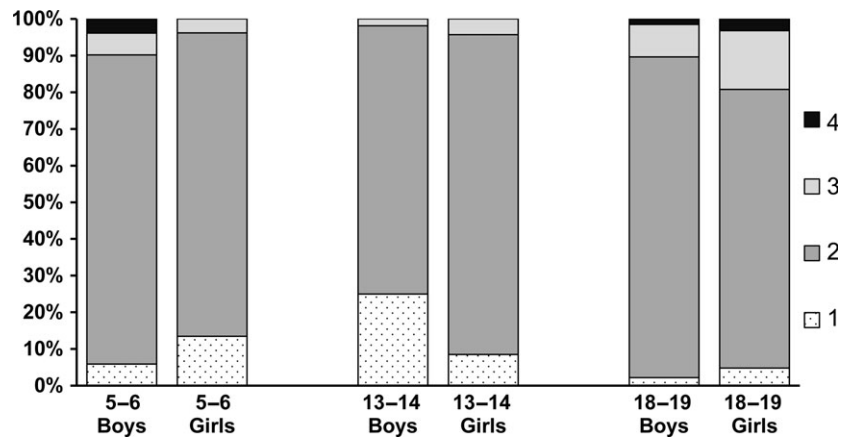
## Discussion

This is the first study that investigated the occurrence of dental erosion among three groups of Yemeni children and adolescents. In addition, the accuracy of the proposed EPRS-M was clinically tested in comparison with EPRS.

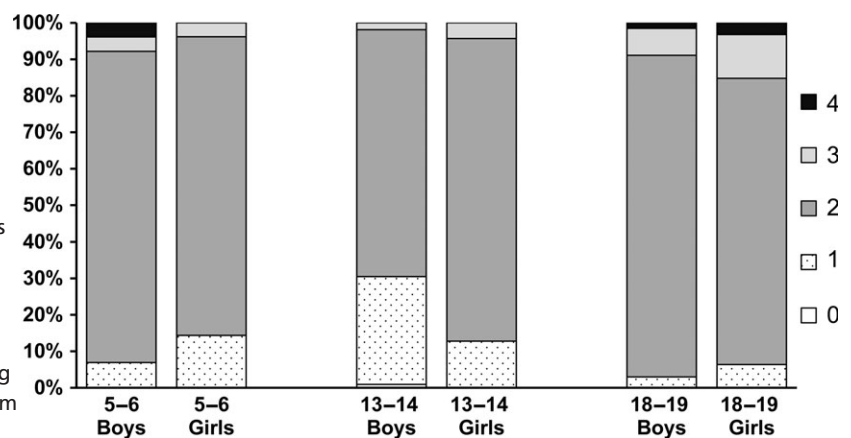
Dental erosion was graded using an EPRS<sup>17</sup> which is a combination of two scales<sup>4,13</sup>. These scales enable the detection of dental erosion changes at an early stage and have been successfully used in previous studies<sup>4,13,17-19</sup>. Partial recording was preferred over full-mouth recording because these teeth have been shown to be good markers and most consistently affected by dental erosion in previous studies<sup>4,13,20-22</sup>. In addition, the partial recording enables efficient use of time.

The study was mainly concerned with the prevalence of advanced dental erosion extending into dentine (grades 3 and 4). This is because at these levels dental erosion might be

**Fig. 4.** Percentage distribution of the combined recorded erosion grades on the marker teeth/surfaces including buccal and palatal surfaces of maxillary anterior teeth (tooth numbers 13–23 or 53–63) and cuppings on occlusal surfaces of all first permanent molars and all primary molars among boys and girls in the three age groups ( $n = 668$ ) according to erosion partial recording system (EPRS) (Table 3).



**Fig. 5.** Percentage distribution of the combined recorded erosion grades on the marker teeth/surfaces including buccal and palatal surfaces of maxillary central incisors (tooth numbers 11,21) and cuppings on occlusal surfaces of mandibular first permanent molars and all primary first molars (Table 3) among boys and girls in the three age groups ( $n = 668$ ) according to modified erosion partial recording system (EPRS-M).



**Table 4.** Comparison between prevalence figures of advanced erosive lesions at individual level obtained by EPRS and EPRS-M among boys and girls in the three age groups.

Age (years)	Gender	EPRS (%)	EPRS-M (%)	P-value
5-6	Boys	9.8	7.8	0.50
	Girls	3.8	3.8	1.0
13-14	Boys	1.9	1.9	1.0
	Girls	4.3	4.3	1.0
18-19	Boys	10.4	8.9	0.50
	Girls	19.2	15.2	0.063

EPRS, erosion partial recording system; EPRS-M, modified erosion partial recording system.

considered pathological in children and adolescents and often begins to cause aesthetic concerns or clinical symptoms while the lower grades might be considered physiological<sup>23</sup>; indeed, these lower grades were present in the majority of participants on at least one tooth surface. In addition, grading of dental erosion extending into dentine (grades 3 and 4) was

found to be more accurate during the grading calibration than the lower grades. Not surprisingly, the few intra-examiner and inter-examiner disagreements that occurred were confined to the enamel erosion (grades 1 and 2).

In this study, advanced erosive lesions were common especially among 5- to 6-year children and 18- to 19-year adolescents, although the prevalence rates of such lesions were lower than those found in previous reports, with prevalence figures of erosive lesions extending into dentine ranging from 16–51% in neighbouring countries such as Jordan and Saudi Arabia<sup>3,13,24</sup> and from 13–32% in western countries such as Sweden and Norway<sup>4,21</sup>. In the countries mentioned, dental erosion has been associated with a modern lifestyle and a high consumption of soft drinks. However, a modern lifestyle has only more recently arrived in Yemen and carbonated soft drink consumption is not yet popular. In addition, the struggling economic situation in Yemen

might result in limited consumption of carbonated soft drinks in comparison with other countries<sup>25</sup>.

Dental erosion has been reported to be higher among boys in some studies<sup>11,19</sup>, while others reported higher prevalence among girls<sup>9,26</sup>. In contrast, no significant differences were found between boys and girls regarding the prevalence of dental erosion in some reports<sup>10,27</sup>. In our study, girls had significantly higher prevalence than boys only in the 18- to 19-year age group while no significant differences were found between boys and girls in the two younger age groups. This might indicate higher acidic diet consumption among girls in the older age group.

In previous studies, cuppings on occlusal surfaces of molars were correlated with the severity of dental erosion on maxillary anterior teeth and were suggested to be markers for the onset of dental erosion<sup>4,28</sup>. The present study confirmed this significant correlation but in the primary dentition only. In addition, the palatal surfaces of maxillary anterior teeth were found to be the only surfaces affected by very severe dental erosion which is in agreement with previous reports<sup>6,13,29</sup>. The reason for this localization of the most severe erosive damage has also been discussed earlier, and several factors were found to be involved including, for example, the pellicle layer which was found to be thinnest on the palatal surfaces of maxillary anterior teeth<sup>18,30</sup>. In addition, previous report has suggested that the tongue has an abrasive effect on the palatal surfaces which, in combination with the erosive components such as acidic drinks and various other acidic dietary items that are in close proximity intraorally to the palatal surfaces of teeth, may form an increased erosive potential in comparison with other sites in the oral cavity<sup>30</sup>.

In an attempt to provide an easy and time-saving method for the assessment of dental erosion in future research, the EPRS-M was proposed in this article and was clinically evaluated in relation to the erosion partial recording system (EPRS)<sup>17</sup>. Both EPRS and EPRS-M utilize the same erosion grading scale, although EPRS-M requires the examination of much fewer marker teeth and thus would be greatly time-saving. At the same

time, EPRS-M had reasonably high sensitivity and specificity in the detection of advanced erosive lesions and resulted in prevalence figures of no significant difference in comparison with EPRS. This could be attributed to the fact that the teeth surfaces proposed in EPRS-M are the most consistently affected by dental erosion and thus serves as marker surfaces for more severe erosive damage.

In a previous study, another modification of EPRS was proposed, namely the simplified erosion partial recording (SEPRS)<sup>4</sup>, which did not include the buccal surfaces of maxillary anterior teeth in the examined marker teeth. SEPRS had very high sensitivity and specificity in relation to EPRS in a Swedish population. Nevertheless, SEPRS did not produce the same high sensitivity and specificity on the Yemeni population in this study, which was due to a different prevailing location of erosive wear lesions, with buccal surfaces of maxillary anterior teeth being more often affected than in the Swedish sample. Therefore, a different modification of EPRS that produce reasonably higher sensitivity and specificity in relation to EPRS was needed.

In this context, it was found that the modification of EPRS to EPRS-M provided a useful alternative for the detection of advanced erosive lesions using the same erosion scale but utilizing fewer marker teeth and surfaces in the grading system. EPRS-M had the added benefit of being reliable as a quick erosion detection tool in future dental erosion research. However, it is suggested that EPRS-M be applied as an initial detection tool and that recording of additional marker teeth be considered whenever erosive damage is detected. Both EPRS and EPRS-M could be similarly used by paediatric dentists as simple and quick tools for grading of dental erosion among children and adolescents.

The results of this study provide reference data and confirm the common occurrence of dental erosion among the children and older teenagers examined; the occurrence of erosion among younger teenagers was less common. The tested accuracy of the EPRS-M qualifies it to be used as an initial quick detection tool in future dental erosion research, especially for epidemiological studies



where time efficiency in the clinical examination is a basic requirement and a cornerstone for their successful conduct.

The major limitation of this study is that selection of participants was performed in a population who attended only one dental hospital located in Sanaa city at UST-DC. However, UST-DC is the largest dental care provider in Yemen and offers free of charge dental care to children and adolescents which makes it the preferred choice for most people from all socio-economic levels. Therefore, although we consider the population attending UST-DC to be relatively representative for children and adolescents in Sanaa as a whole and probably Yemen also, we agree that some selection bias cannot be excluded. Indeed, it would have been preferable to use schools from different parts of Sanaa as the sampling frame but for several practical and cultural reasons this was not possible.

It is recommended to conduct further population-based dental erosion studies in Sanaa and other places in Yemen. In addition, it seems necessary to initiate planning for dental erosion preventive programmes in the Yemeni community and to conduct future studies that test their effectiveness. Generally, there is also need for a universally accepted dental erosion grading system that could be used both in research and clinic. The system used in this study could form a basis for such a development.

#### Why this paper is important to paediatric dentists

- The paper adds knowledge and understanding about the occurrence and distribution of dental erosive lesions among children and adolescents, who are commonly examined by paediatric dentists.
- The paper presents a user-friendly, clinically-relevant erosion scale and system for grading of dental erosion according to two partial recording systems (EPRS and EPRS-M) that could equally be used by paediatric dentists for quick and reliable grading of dental erosion among both children and adolescents.

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#### Conflict of interest

The authors declare no conflict of interest.

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