Introduction

In the last thirty years the epidemiological caries trend has shown a significant decrease among paedodontic populations [Marthaler, 2004], especially in western preschool subgroups, though in caries distribution important differences, represented by economical, social and geographical factors [Thomson et al., 2004; Sweeney et al., 1999; Ferrazzano et al., 2006; Campus et al., 2007; Newton et al., 2005; Petersen, 2005], still persist. Many scientific studies, reported in the European literature [Marthaler et al., 1996; Petersson and Bratthall, 1996], have marked a progressive caries reduction, in term of dmft index, in the early age people, although significant discrepancies have been seen between northern and southern European countries. This gap could be due to several heterogeneous factors, which could be represented by disparities in socioeconomic development, dietary habits, parental attention and attitudes in child oral hygiene, and access to public dental health services. The last aspect, as demonstrated in the international scientific literature, can play an important role in influencing caries distribution: the presence of public dental care services and of national preventive programmes can contribute to reduce the highest dmft scores in the populations with least social, economical and cultural levels, and can also balance the disparities between local and immigrant people. The dmft index values in countries with wide and consolidated public dental care services, like Norway, Denmark, Sweden (in which the dental practitioners employed are from 30% to 50%) are very low (from 1.0 to 1.5), while in countries with few public dental health services, like Greece, Spain and Italy (where the public dental practitioners represent from 6% to 15% of all dentists) [Pine, 1997; Vanobbergen et al., 2001] the dmft index values are high (from 1.8 to 2.7). In Italy, where dentistry is mainly a private practice, national preventive programs are very scant [Campus et al., 2004], and there are no national data on caries prevalence to define the caries trend in the last years. The United Kingdom national caries database, which is updated every 10 years, allowed to assess the epidemiological trend of the disease and the effectiveness of preventive actions [Lader, 2003]. The Italian epidemiological data have been obtained by several surveys, promoted by local or regional health authorities [Ferro et al., 2007a] and allowed to determine the local caries situation and to program targeted preventive actions. In absence of national strategies and data, community caries prevention programmes and preschool age populations surveys represent powerful tools to reduce the dmft scores in the local community and a good way to obtain epidemiological data. In this sense the direct involvement of paediatricians in planning, managing and achieving the epidemiological surveys, is very important; paediatricians, as supported by the American Academy of Paediatrics, represent an ideal outpost in oral prevention [Di Giuseppe et al., 2006; Santos da Silva Pierro et al., 2004] and are an essential territory related benchmark: the paediatrician role in caries prevention is generally confined to inform the parents about dietary and oral hygiene and to manage the systemic fluoride prophylaxis, based on age and child caries risk [Drodz et al., 2001]. The paediatric
The present study represented an important part and it could be the basis for further studies in the district of Ascoli Piceno.

Materials and methods

The study was conducted according to a paediatric and paedodontic interdisciplinary approach: the survey was performed with the involvement of four paediatricians who work in the villages belonging to "Unione dei Comuni Vallata del Tronto", in the province of Ascoli Piceno (Marche, Italy). They were involved in the preliminary phases of the study, that consisted in an information phase and in a recruitment phase. The first phase was characterised by the intense work of information and explanation about the purpose and the aims of the survey: the paediatricians, in their offices, informed all parents of 3-year-old children about the importance of early caries intervention and about the possibility to have their child examined by a dentist. In the second phase paediatricians collected the informed consents. The school principals of the "Unione dei Comuni Vallata del Tronto" were asked permission to visit the children in the school nurseries during school hours. The recruited sample consisted of 120 3-years-old children but at the clinical examination 38 of 120 involved children were not examined because they were absent from school on the day of the examination. Therefore the final sample consisted of 82 3-year-old children, attending kindergarten, 38 males and 44 females. The sample was not randomised. No previous sample size calculation was performed.

In the next phase the children underwent dental clinical examination in two days on May 2008; the survey was conducted in well-lighted schools nurseries during school hours. No radiographs were taken. Disposable kits, consisting of a pair of disposable gloves, a dental probe, a mouth mirror and a pair of tweezers were used. Dental caries diagnosis was assessed according to the rules outlined by the British Association for the Study of Community Dentistry (BASCD) [Pitts et al., 1997] through a visual examination followed, if needed, by dental probing, and considering as caries into dentine (d3t) the probing, and considering as caries into dentine (d3t) the surveying threshold. For the quantitative evaluation of caries experience the dmft index was recorded, while in order to avoid the twisted effect of the mean dmft and to identify the subpopulations of the sample most affected by caries [Marthaler, 2005; Campus et al., 2003], the Sic index was used. Mean and standard deviation of dmft index and Sic index score were calculated. A child was considered caries free when his/her dmft total score was equal to 0. The survey was conducted by one calibrated examiner: the examiner calibration was previously realized over 30 children (equivalent to the 36.5% of the whole sample to examine), recruited in the Paediatric Dentistry Department of the L’Aquila University Dental School. The kappa statistic was used to assess the inter-examiner reproducibility, while data analysis was executed both with descriptive and associations statistics; the association between caries and gender was investigated by using the $\chi^2$ test, assuming $p < 0.05$ value as statistical significance level. Care Index (ft/dmft x 100) and the Treatment Need Index (dt/dmft x 100) were calculated in order to obtain more data on the sample.

Results

The results of the study are shown in Table 1. The inter-examiner assessment in caries diagnosis, evaluated by kappa statistic, was good (Cohen k test = 0.85). Of the whole sample of 82 children 61% resulted “caries free” with a dmft score of 0. The decayed teeth (mean $dt = 0.97 \pm 1.66$) accounted for 77% of all index components, while filled teeth (mean $ft = 0.09 \pm 0.33$) accounted for 23%; no missing teeth were observed. The lower posterior teeth had the highest dmft score (mean $dmft = 0.56$), while the upper anterior teeth had the lowest (mean 0.0). The 38% of the examined teeth resulted affected by dental caries: the most affected were second lower deciduous molars (13.4%), followed by first lower deciduous molars (12.2%) and by the first upper deciduous molars (11%). About 8% of the examined teeth resulted filled: the most filled were first upper deciduous molars (3.66%), followed by the first lower deciduous molars (2.44%) and by the second lower deciduous molars (1.22%). Caries distribution by tooth is shown in Figure 1. The overall mean dmft score was 1.06 ± 1.64. The distribution of the dmft scores > 0, showed that 75% of this values was included from 1 to 3, while the remaining 25% from 4 to 7 (Figure 2). The $\chi^2$ test supplied a value of 0.65, with $p > 0.05$. The care index was 8.5% while treatment need index was 91.5%.

Discussion

Many factors indicate a moderate caries prevalence in the examined sample: as expected the decay represents the most frequent component (77%) of the dmft score, while the absence of missing teeth (m = 0) is a positive element; the very low care index (8.5%) and the high treatment need index indicate both a scant attention by parents and clinicians and the necessity of a major parental information about tooth decay and preventive

![Table 1 - Main results of the 3-year-old sample survey](image-url)
between paediatricians and parents can enhance the primary prevention measures and can help to validate the effectiveness of the prevention strategies through the direct analysis of the population on which those strategies are directed. The recruitment of the paediatricians can take a long time, because the recruitment, as the information phase, is done when the subject visits the paediatrician’s office (i.e. for flu or sore throat); this casual recruitment may originate a non representative sample, and this depends on the recruitment period and the total number of patients managed by the paediatricians.

In this study the interdisciplinary paediatric-paedodontic cooperation represented an important step. The literature does not report studies focusing on the interdisciplinary collaboration and this aspect seems neglected. The paediatricians’ involvement in paedodontic problems is generally focused on orthodontic issues and early interception, while it could be very important in caries epidemiology and prevention management, as well as an early caries interception. In this study the interdisciplinary approach was essential in the preliminary phases of the survey, and it could represent the central element for future preventive measures, such as fluoride prophylaxis, improvement of oral hygiene motivation or frequent dental screening, in the district of Ascoli Piceno.

Conclusion

The examined sample situation (dmft 1.06 ± 1.64, caries free 61%) did not appear to be critical, although 2010 WHO goals were far from being reached. Data analysis suggested to monitor the sample over time through future preventive surveys based on the interdisciplinary protocol, and through planning of local preventive actions aimed to reduce the mean dmft score and to increase the caries free experience in the local population.
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References