Public Community Orthodontics in Italy. Description of an experience

ABSTRACT

Aim To assess the reliability and simplicity of a method chosen for selecting subjects to be treated in the orthodontic system and for the acceptance of the method by the community.

Materials and methods 490 orthodontic patients received full dental examination. For each patient a table was prepared for the detection of malocclusion in which the occlusal characteristics according to the Norwegian Orthodontic Treatment Index (NOTI), the molar class and the teeth present were recorded. The parents of the examined children completed a questionnaire aimed at identifying their social ranking. In the same questionnaire, how many siblings the patient had was also asked. Each of the three parameters were rated alphanumerically and a score of 1 was given to each child; the sum of three scores gave the final result for the subject. Acceptance of the procedure in the general community was evaluated by the number of complaints received by the Public Relations Office (URP).

Results The social classes most represented in the sample are “blue collar class” (42.2%) and “white collar class” (35.6%). There was an average of 2.1 children per family (SD=0.6). The distribution of the type and grading of the treatment need was similar throughout the different social classes.

Conclusion The chosen method proved reliable for two reasons: no complaints with the local URP and ease of application of the selected criteria.

Keywords Community dentistry; Italy; Orthodontics; Social class.

Introduction

Among the countries of the European Union it is possible to distinguish six patterns of Public Dental Care Assistance (Beveridgian, Bismarkian, Nordic, Southern European, The Eastern European in transition and Hybrid) [Widström and Eaton, 2004]. In Italy, the Southern European model is applied, which is characterised by primarily private care, although a small proportion of services is provided directly by the National Health Service (SSN). According to data collected by the Italian Ministry of Welfare, 3,457 dentists work for the SSN. Of these, 1,343 are employees of the SSN and the other 2,114 are outpatient specialists, providing for little more than 4 million services annually (4,264,379, data from the Ministry of Health, 2007).

Until 2001, a working model for public dental health care did not exist in Italy as it did in other countries such as the UK. For many years in the UK dental assistance has been operated by the Hospital Dental Service (HDS), a branch of the Public Dental Service, in four main subspecialties: oral and maxillofacial surgery, orthodontics, paediatric dentistry and restorative dentistry.

The Italian SSN was established about forty years ago (Act No. 883, 23/12/1978) and was inspired by the English National Health Service; it is based on three principles.

› Universality, both in terms of access to care and all inclusiveness of services.

› Funding through general taxation, under which all citizens contribute according to their means and receive according to their needs.

› Free services for all.

In the original draft of the SSN, dental care had not been included. With the introduction of the Essential Levels of Assistance (LEA) (Decree of the President of the Council of Ministers [DPCM] dated 11/29/2001), the different types of services offered to patients by the SSN were listed. For the first time this also included dental care. The exponential increase of the need for health care compared to the ever decreasing funding, is a common trend in all industrialised countries. This reason has therefore forced the Italian legislature to revise parts of the philosophy supporting the current SSN [Macciocco, 2001]. The LEA was then amended by changing the principle of universal health care to that of selective public health care [Macciocco, 2002]. The government has delegated responsibilities and regulations to each individual region to determine the terms of the LEA. The region of Veneto, for example, with the Deliberation of the Regional Council (DGR) 2227/2002 decided to provide comprehensive care for children and adolescents.
TABLE 1 Norwegian Orthodontic Treatment Index (NOTI).

(0-16 years old), including treatment of malocclusions for patients up to 12 years of age. The implementation of this regional law has been raising a number of issues. It is, in fact inconceivable for the low number of public dentists on duty at the Regional Health Service (SSR) (177, non-official data provided by the authors) to fully manage dental health care for more than 700,000 individuals, including children and teenagers – a ratio of about 1:4,000 (http://www.istat.it, 2009).

In other European countries such as Norway, which has a comparable population, there are 1,170 dentists who are available exclusively for the Public Dental Health Service [Widström and Eaton, 2004].

The problems regarding the implementation of the DGR can be summarised in four points:
- lack of recent epidemiological data on the prevalence of malocclusion and thus the impossibility of correctly estimating the expected workload for the SSN;
- diagnostic criteria for determining which malocclusions should be treated;
- which ages should be treated;
- inadequacy of resources available in the public sector.

Since 1984, at the Dental Unit – Cittadella Hospital - Health District No. 15 “Alta Padovana” in the Veneto Region, dental care has been provided to children and adolescents. Since the beginning of the service there has been the need to identify objective and transparent criteria for the selection of patients entitled to orthodontic treatment in the SSN, given the disparity between care needs and available resources.

In 2001, a supportive care model was devised to grant benefits to people suffering from severe malocclusions belonging to a disadvantaged socioeconomic class.

The model is structured as follows:
- the patient receives a diagnosis of whether or not orthodontic treatment is necessary and on the possible ideal timing of the treatment;
- through a self-administered questionnaire patients are classified according to the socio-economic status of the family;
- the total number of people in the household is determined.

The socioeconomic parameters provide insight into the ability of the family to afford the cost of orthodontic treatment.

The type and severity of malocclusion is classified by the NOTI (Norwegian Orthodontic Treatment Index) (Table 1) which was chosen for its ease of use. It was developed in the early 90s in Norway and classifies malocclusions in four categories based on the necessity of treatment [Espeland et al., 1992].

Medical literature describes several types of orthodontic indexes all falling into five different categories: indices of classification, epidemiology, necessity of treatment, results of treatment and complexity of treatment [Draker, 1960; Shaw et al., 1995; Parker, 1998; Daniels and Richmond, 2000; Beglin et al., 2001; Jarvinen, 2001; Firestone et al., 2002; Mandall et al., 2005, Theis et al., 2005].

The objective of this study was to assess the reliability and simplicity of the method chosen for selecting subjects to be treated in the orthodontic system and for the acceptance of the method by the community.

Materials and methods

Sample selection
The study was conducted during the 2008 calendar year. During this period, at the Dental Unit, 490 orthodontic patients received full dental examination (235 males and 255 females, average age = 9.8 years SD = 2.9).

Methods
The visits were carried out by a single calibrated
Examiner calibration
The examiner was calibrated in November 2007. The procedure was conducted independently from the study to avoid bias in the analysis. Agreement on the study’s design and diagnostic criteria was reached by all the authors. The examiner visited 25 children belonging to the sample age group of the study. For each subject a table was completed for detection of malocclusion according to the NOTI. The same subjects were examined again after 72 hours. The accuracy between the first and second examination was very high (Kappa statistics from 0.80 to 0.93).

Statistical analysis
For each patient a table was prepared for the detection of malocclusion in which the occlusal characteristics were recorded according to the NOTI index, the molar class and teeth present. The parents of the examined children completed a questionnaire aimed at identifying their social ranking as indicated by Costa G. et al. [2004], which divides Italy into four different social classes: high (high class), white collar class (clerks), self-employed, and blue collar class (working class). In the same questionnaire, how many siblings the patient had was also asked. Each of the three parameters were rated alphanumerically (Table 2) and a score of 1 was given to each child; the sum of three scores gave the final result for the subject.

The acceptance of the procedure in the general community was evaluated by the number of complaints received by the Public Relations Office (URP), concerning both the criteria of access to treatment and the reasons for the lack of access to treatment by families applying for orthodontic treatment in 2008.

Statistical analysis was performed using software Stata 9 Software (Stata Corp, TX, USA). The possible independence between the qualitative variables was tested using the $\chi^2$ test. The prevalence of occlusal problems was calculated for subjects with IOTN scores greater than 2. The odds ratios (ORs) were calculated using a control group of subjects with more favourable levels. The linear trend of the proportions was calculated using the $\chi^2$ test for trend.

Results
Table 3 shows the SES (Socio-Economic Status) of families according to the Costa et al. [2004] classification. The social classes most represented in the sample were “blue collar class” (42.2%) and “white collar class” (35.6%). There was an average of 2.1 children per family (SD=0.6). Table 4 shows the overall and social class distribution between social class of dental malocclusions classified according to the NOTI.

Discussion
Evaluating a reliable method for the selection of subjects for orthodontic treatment was the aim of this study. Results confirmed the reliability of the chosen method. For this study four different variables were taken into consideration regarding access to treatment at the Dental Unit:

› social class of the household;
› evaluation of the patient’s need for orthodontic treatment;
› number of children in the household;
› annual patient turnover.

Three hundred patients are currently being treated with an average annual turnover of 25%. On average 75 new subjects among children and adolescents begin orthodontic treatment each year.

The alpha-numeric score assigned by the various parameters gave priority to social class: nearly 80% of households belonged to two social classes (42.3% to the “blue collar class” and 35.6% to the “white collar class”). Since the average number of children per household was similar for all the 4 classes, this parameter did not significantly influence the score of each individual, except in cases of particularly large families.

The distribution of the type and grading of the necessity of treatment was similar throughout the different social classes. In our experience, of the 75 subjects treated, 73 were of the blue collar class. The other two belonged to the white collar class but had nuclear families composed of 6 and 7 children. The method used did not raise any
negative responses at the local URP.

The chosen method proved reliable for two reasons:
› no complaints with the local URP;
› ease of application of the selected criteria.

Although the method was selective and did not grant treatment to the entire population, the lack of complaints to the URP demonstrated the general public's acceptance of the system. Of the roughly 500 people visited, less than 15% were granted treatment.

In the model for supportive care, however, medical examinations for counseling and the scheduling of orthodontic treatment were guaranteed for all patients upon request. The diagnostic criteria (NOTI) chosen for social classification and total number of children proved to be extremely simple for categorising each individual subject. Obviously, the reproducibility of this method could not be separated from the ability of trained orthodontists to treat malocclusion. The higher value assigned for social class facilitated access to treatment for those who otherwise could not receive treatment without a great economic burden. Furthermore, consideration was not given to the disproportion between dentists working in different capacities for the SSN and the need for dental treatment, which at best, concerned at least 50% of the child population (currently there is a lack of reliable data at both the regional and national levels on the prevalence of malocclusions divided by both age and by deviation found). As mentioned in the introduction, 177 "public dentists" worked in the Veneto Region. Not all of them worked full time, however. There were also specialists who provided public services only 5 hours a week. There was also an array of different professionals (general dentists, maxillofacial surgeons, university professors with public welfare duties) who provided care in different locations (public clinics, private practices, university hospitals, hospital wards). Considering the fact that the treatment provided by the LEA for children and adolescents only partially satisfies the dental care guaranteed by the law, the discrepancies and the need for revision become quite clear.

With regard to orthodontics, the LEA of the Region of Veneto set the age limit for receiving dental care to 12, which raised another problem. This restriction meant that in almost all cases, care was limited to a strictly preventative approach. Whereas a crossbite in a mixed or deciduous dentition could be treated in an effective manner, the same could not be said for a Class II malocclusion, which also requires another intervention for the permanent teeth involved. In fact, for malocclusions to be cured permanently, it is necessary that all teeth are fully erupted, without going into detail of the current heated debate in international medical literature between advocates of a single-phase intervention [Proffit, 2006] and supporters of a two-phase intervention [Dugoni, Aubert, 2006; Dugoni, 1998]. At the same time, it seemed inappropriate that orthodontic treatment began in one place and was continued elsewhere, due to the age limits set by the LEA.

The model outlined in this paper used for public dental care was easy to apply and did not raise any negative criticism from the subjects in which it was tested. The two parameters were good indicators that the approach was valid and therefore should be proposed for the Italian SSN.

The chosen method proved reliable for two reasons:

References

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*TABLE 4* Comprehensive and shared per social class distribution of the recorded malocclusions (NOTI) in 490 patients.