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Tandheelkundige zorg voor dieper-zwakzinnigen. Onderzoek naar parodontopathieën, tandcariës, gebitsbeschadigingen en de behandelbaarheid van 130 dieper-zwakzinnigen 12-t/m 20-jarige jongens, opgenomen in inrichtingen

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11. SUMMARY

During the last decade increasing interest has been taken in the plight of the handicapped and because of this dental care for the mentally retarded receives more and more attention. However, research into the organization of dental care to satisfy the needs of mentally retarded persons remains quite scanty. Inquiries into the prevalence of dental diseases have only been done on a relatively small scale and the resulting data are often not, or insufficiently, differentiated for the different levels of mental retardation (paragraph 6.4.3. and 7.3.2.). Very little has been published on methods of managing the more severely retarded in the dental situation; most studies describing techniques for dental treatment under general anaesthesia (paragraph 9.1.).

In relation to the dental care of the more severely retarded a number of specific problems arise (chapter 3.).

Mentally retarded children who are admitted to an institution where up to then, often been totally deprived of any form of dental care. This was the case in 86% of the residents in one of the institutions where the research, reported in this study, has been carried out.

Retarded persons are often incapable of indicating dental complaints and this can sometimes lead to grave behavioural disturbances.

Some dental and oral disorders, such as halitosis, may provoke feelings of pity, a shudder or even of repel and inhibit social intercourse with the retarded person concerned.

The well-being of some mentally retarded persons can be seriously disturbed, and their development hampered, when the condition of their dentition causes a distorted physiognomy.

A number of factors complicate dental treatment. It is often quite difficult to perform effective oral hygiene. Some retarded behave unco-operatively during treatment. Re-establishment of oral functions by removable prosthetic appliances is usually impossible, or not desired.

In chapter 4 the aim of this study was explained. The investigations were carried out to determine the type, the extent and the severity of periodontal disease, of dental caries and of traumatic injuries to the teeth, in relation to the level of mental retardation. The possible influence of some factors, related to being mentally retarded and associated handicaps, on the manifestation of these diseases were studied. Data obtained in this study were

compared with data on the prevalence of dental diseases in non-handicapped children of the same age. Finally, the behaviour which institutionalized boys showed during dental treatment, was measured.

In chapter 5 the composition of the group studied and the examination methods were described.

The experimental group consisted of institutionalized boys from two homes ("Hendrik van Boeijen-Oord" in Assen and "Huize Mariëncamp" in Rolde), ranging in age from twelve to twenty years. On the basis of intelligence and adaptive behaviour test data, as well as on data from clinical observations, the following groups, according to the level of mental retardation, were formed by psychologists:

group A: profound retardation; IQ 20 and below; maximum attainable mental age of 2 years;

group B: severe retardation; IQ 20-30; maximum attainable mental age between 2 and 4 years;

group C: moderate retardation; IQ 40-55; maximum attainable mental age between 6 and 8 years.

From each of these 3 functional level groups and for children of each year of age from 12 to 20 (= 27 groups) five boys were selected at random to form the experimental group (Table 5.1.). This group of 130 included approximately 4% of the institutionalized more severely retarded boys in this age category in the Netherlands (Verbraak, 1973).

Three sessions were necessary to gather all the data for each child. During the first session, a clinical examination was carried out (paragraph 5.3.); radiographs were taken during the second session (paragraph 5.4.) and in the third session, an amount of oral fluid was collected in order to determine some oral fluid values (paragraph 5.5.). Additional data were obtained by an interview (paragraph 5.6.) and from medical and dental clinical records.

Chapter 6 discusses periodontal disease. A pilot study demonstrated that reliable measurement of gingivitis and pocket depth was impossible in this study, because many children suffered from either diphenylhydantoin-induced gingival hyperplasia or excessive calculus formation. The gingival health was indirectly estimated by using the All Surfaces Debris Index and the All Surfaces Calculus Index (Greene and Vermillion, 1960 and 1964). Alveolar bone loss in the 18-20-year-old retarded boys was measured from radiographs. The resorption of the alveolar crest around the incisors and the first molars in the lower jaw was measured both in mm and in tenths of the optimum bone height (Schei et. al., 1959; figure 6.1.).

Mean plaque scores for the various functional levels and age groups, were presented in Table 6.3. On average, more than half of each tooth surface was covered with plaque. The mean plaque scores for group A were statistically

significantly higher than for groups B and C. The accumulation of plaque did not decrease with increasing age, as usually happens in non-handicapped of this age category. The distribution, per tooth surface, of the ASDI-values showed a characteristic pattern (figure 6.2.). Relatively, the smallest amount of plaque was found on the bicuspid, while the plaque scores increased progressively in the direction of the molars and of the incisors. This latter finding clearly deviates from the usual plaque distribution found in non-handicapped people (figure 6.3.).

In nearly all retarded boys calcified deposits were seen and these increased markedly with the increasing degree of retardation (Table 6.3. and figure 6.4.). The mean calculus indices for the group A, B and C were respectively 5, 3 and 2 times higher than for non-handicapped boys (Greene and Vermillion 1960 and 1964; Greene 1963 and 1967). The percentage of the total number of individual teeth showing calcified deposits, was presented in figure 6.5. The calculus distribution, for all three functional level groups, showed roughly the same pattern as in non-handicapped subjects (figure 6.6.). However, in the retarded boys from group A and B calculus was seen repeatedly in unusual places like on the labial surfaces of incisors in the upper jaw, and on buccal and occlusal surfaces of molars in the lower jaw. No correlation could be demonstrated between the values of the plaque and calculus indices and the possibility and frequency of tooth-brushing, lip closure, slobber, pH_o -value and the concentrations of calcium and phosphate in the oral fluid. To the extent that the diet was of softer consistency, higher plaque and calculus accumulations were found (Table 6.6.); retarded boys who received an almost liquid diet, suffered frequently of excessive calculus formation (figure 6.9).

The high plaque and calculus scores, as well as the characteristic plaque distribution, indicate that mostly relatively old, and therefore for the periodontium strongly pathogenic plaque, was present on the teeth. The destruction of the periodontal tissues were found to be in an advanced stage. Alveolar bone loss in the boys, ranging in age from 18 to 20 years (Table 6.4. – with the exception of the boys with Down's syndrome), resembled the extent of bone loss in non-handicapped men twice as old (Schei et. al., 1959). The severe resorption of the alveolar crest in children with Down's syndrome (figure 6.7) is a specific problem.

Dental caries was discussed in chapter 7. Pit and fissure caries and gingival caries were examined clinically (paragraph 7.4.1), approximal caries was assessed from bitewing and periapical radiographs (paragraph 7.4.2.).

47% of the boys from group A, 20% from group B and 2% from group C were caries-free (Table 7.6.). The caries experience (DMF-T and DMF-S) for the three functional level groups was presented in Table 7.7. Progressively less dental caries was found as the level of retardation increased. The differences

in caries experience between the groups were statistically highly significant. The caries experience in these mentally retarded was compared with that in non-handicapped boys in the Netherlands (Kwant et. al., 1974, detailed information being obtained from the caries research unit of the organization for health research TNO; see figures 7.9. and 7.10.). The percentage less dental caries in the boys of the various functional level groups as compared to the non-handicapped were given in Table 7.16. In particular, the comparatively low approximal caries figures are of great importance from the preventive and curative dental health care point of view.

The pattern of distribution of the pit and fissure caries (Table 7.9.) and of the approximal caries (Table 7.11.) was essentially the same for the retarded and the non-handicapped boys but this did not apply to the gingival caries (Table 7.10.). In the retarded, a comparatively high percentage gingival caries was seen in the labial surfaces of the upper front teeth. This was probably due to the high plaque accumulation in this area.

Spacing was frequently observed in the dentitions of the retarded (Table 7.12. and figure 7.7.). Approximate 42% of the mesial and distal tooth surfaces were not in contact with the neighbouring tooth. 89% of all approximal carious lesions were located in contact surfaces and only 11% in surfaces next to a space. It was calculated that 25-30% fewer approximal caries developed because of the frequent occurrence of spacing (paragraph 7.5.4. and figure 7.8.).

Trends of negative correlations were found between the prevalence of carious lesions and calcified deposits.

No correlation could be demonstrated between caries experience and pH_o -value, buffering capacity and calcium and phosphate concentrations in the oral fluid (Table 7.14.).

Enamel hypoplasia was observed in 44% of the retarded boys in this study. It is possible that formation and mineralization defects of the enamel could cause reduced caries susceptibility and this may have contributed to the differences in caries experience found between the retarded and the non-handicapped.

The mean frequency of daily sugar consumption, in the form of beverages and sweets, was presented in Table 7.15. Possibly, non-retarded children in the Netherlands eat sweets 10, 5 and 2½ times more frequently than the institutionalized children from the groups A, B and C respectively. These differences in sugar consumption may explain much of the difference in caries experience between the functional level groups, as well as between the retarded and the non-handicapped children.

Five profoundly retarded boys ruminated, and their teeth showed extensive decalcification (figure 7.3.); but these seemed different from those due to the caries process. Probably the decalcifications in the ruminating boys were due to etching of the teeth by the acid gastric juice.

The investigation into the prevalence of traumatic injuries to the teeth consisted of a clinical and a radiographical examination (chapter 8). Injuries to the hard dental tissues were classified according to Andreasen (1970) with the exception of crown infractions (paragraph 8.2. and 8.6.1.). Root fractures and post-injury complications, such as pulp necrosis, obliteration of the pulp cavity, root resorption and loss of marginal bone support, were assessed from radiographs (paragraph 8.5. and 8.6.2., figures 8.2. - 8.8.).

Dental injuries were encountered in 81% of the retarded boys and, on average, 3.4 teeth per child were traumatized (Table 8.5.). Thus, 3 times as many retarded boys had traumatized teeth and the number of teeth involved was 10 times as great compared with non-handicapped boys (O'Mullane, 1972; Zadik et. al., 1972; Ravn, 1974; figure 8.9).

92% of the injuries to the hard dental tissues consisted of uncomplicated crown fractures (Table 8.6.). Pulp necrosis, accompanied in 40% with root resorption, was the most frequently occurring post-injury complication (Table 8.7.).

However, the clinical examination did not give an accurate impression of the severity of the traumata, because:

- 20% of the traumatized teeth had been lost, had a poor prognosis or needed endodontic therapy;
- 58% of the post-injury complications arose in clinically healthy teeth or in teeth with minor fracture of the enamel (Table 8.8.);
- only 20% of the teeth with pulp necrosis showed intrinsic discoloration of the crown (Table 8.10.).

The discrepancy between the clinically and the radiographically observed injuries, as well as the distribution of the post-injury complications (Table 8.9. and figure 8.10.), indicated that many of these complications were due to luxation injuries.

The distribution of injury to the hard dental tissues (57% in the upper jaw and 43% in the lower jaw; Table 8.9.) is quite different from that found in the non-handicapped (Table 8.3.). This may be caused by the frequent occurrence of indirect traumata, e.g. epileptic seizures and automutilation.

In chapter 9, it was explained that the emotional problems, which may be encountered in dental treatment of the mentally retarded, may differ quantitatively, but not qualitatively from the problems met in non-handicapped infants. Unco-operative behaviour is mostly the result of an attempt by the child to escape from the situation of anxiety about the unknown, of reactivation of anxieties in the past, or of fear of pain or other unpleasant experiences. The unco-operative behaviour may become evident during one of the following moments: at the announcement of a visit to the dentist, when entering the dental surgery, at meeting the dental team and during treatment. With many of the fellow-workers in both institutions measures

were developed to guide the retarded through each of these situations. These measures can be compared to methods of management also used in dentistry for children, such as desensitization, model-learning and behaviour modification techniques. It must be noticed, however, that in the management of the retarded, very few distracting stimuli are allowed and that the role of the attendants is usually more active than when treating non-handicapped infants. If, in spite of the above measures dental treatment remains impossible, drug therapy can be used. The schedule in Table 9.1. serves as a guide for prescribing these medicaments.

The behaviour of the retarded boys was measured during the clinical examination and during the appointment in which the radiographs were taken. The behavioural rating scale of Frankl et. al. (1962) was used with the exception that one point was added to this scale namely: "point III, passive acceptance of treatment" (see paragraph 9.4.).

The behaviour of the retarded boys during the clinical and the radiographic sessions was presented in Tables 9.2. and 9.3. It can be seen from these tables that approximately one half of the profoundly retarded, and one third of the severely retarded, needed premedication. The behaviour after medication was very different for the various retarded children (Table 9.4.), but in no instance was general anaesthesia necessary. With the use of neuroleptics an attempt was made to show the guiding measures to full advantage. In Table 9.6., the behaviour was given of those retarded boys who needed premedication in the past, but who did not do so during the appointments in this study. From these data, it may be concluded that even some of the very frightened more severely retarded can learn to be co-operative during dental treatment. Finally, it must be pointed out that data on behaviour will always remain somewhat subjective. Thus, to what extent the behaviour of mentally retarded persons will be judged as interfering with the possibility of dental treatment, will depend for a great deal on the attitude, and in particular on the tolerance, of the dental team.

In chapter 10 the results of this study were discussed in the context of planning dental health care for mentally retarded persons and, in addition, some suggestions have been given for further research.