

# 行政院國家科學委員會補助專題研究計畫成果報告

## 智障兒童的口腔健康情形與治療需求 及其相關因素之流行病學研究

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## 智障兒童的口腔健康情形與治療需求及其相關因素 之流行病學研究

An Epidemiological Study of Oral Health Condition, Treatment Needs,  
and Associated Factors in Mentally Retarded Children

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### 中文摘要

現今台灣地區智障兒童的口腔健康狀況不被了解。本流行病學研究之主要目的是探討6到12歲智障兒童的口腔健康情形與治療需求及其相關因素。本研究的對象包括：135位就讀台中市七所小學啟智班的學生(第一組)、82位6到12歲在啟智教養院的智障兒童(第二組)、488位來自七所小學一般班的學生(對照組)。這些兒童接受：問卷調查(由父母填寫)與口腔檢查。本研究的結果發現：平均乳牙 dmft (decayed, missing and filled primary tooth) (在對照組, 第一組, 第二組分別是 2.7, 2.3, and 1.8) 與平均恆牙 DMFT (decayed, missing, and filled permanent tooth) (在對照組, 第一組, 第二組分別是 1.4, 1.5, 0.9) 沒有顯著差異 ( $p>0.05$ )。而蛀牙的盛行率在三組分別是 78%, 49%, 83%, 有顯著差異 ( $p<0.05$ )。在個別牙齒的治療需求方面, 第一組需要較多的單面填補, 其他治療在三組沒有差別。問卷調查的結果顯示下列因素在三組有顯著差異：父母所認知的口腔健康問題、牙科治療需求、使用牙科治療的障礙；是否看過牙醫；是否用過全身或鎮靜麻醉；刷牙次數；是否曾經塗氟；是否用含氟牙膏；是否用含氟漱口水；是否用過氟錠、父母的教育程度等。以多變項邏輯斯回歸分析蛀牙與否, 在控制了年齡、性別、

定期看牙醫、刷牙次數、塗氟、用含氟牙膏、用含氟漱口水、用氟錠、父母的教育程度、及出生次序等因素後, 第二組比對照組較少蛀牙(勝算比=0.2, 95% 信賴區間: 0.1-0.4)。多變項回歸分析, 同時控制上述重要因子後, 第二組比對照組的 dmft 低 ( $p<0.05$ ), 而 DMFT 沒有顯著差異。總結而言, 在啟智教養院的兒童比就讀小學啟智班的兒童及普通班的學童有較少的蛀牙。

關鍵詞：智障、口腔健康、蛀牙、治療需求、流行病學

### Abstract

The oral health and treatment need of mentally retarded children in Taiwan has rarely been studied and is unclear. The purposes of this epidemiological study are to examine dental health and treatment needs of children with mental retardation and normal controls, and to investigate the children's use of dental care, parents' perception of treatment needs, and barriers to utilization of dental services. Study subjects included (1) group 1: 135 mentally retarded students in the special education programs from seven elementary schools, (2) group 2: 82 mentally retarded children in special institutions, and (3) group 3: 488 controls at regular program from seven elementary schools in Taichung

city. These children received a questionnaire for parents to answer and an oral examination. The results of oral examination showed that both mean dmft (decayed, missing and filled primary tooth) (2.7, 2.3, and 1.8 for controls, group1, and group2, respectively) and mean DMFT (decayed, missing, and filled permanent tooth) (1.4, 1.5, and 0.9 for controls, group1, and group 2, respectively) were not significantly different among three groups of children. The caries prevalence was 83%, 78%, and 49%, respectively, for controls, group1, and group 2 ( $p < 0.05$ ). As for individual tooth's treatment need, only one-surface filling was significantly higher in group 1 children, the others were similar among three groups. In the questionnaire survey, variables significantly different among three groups were: parent's perception of child's dental problems and treatment needs, ever had a dental visit, ever had general anesthesia or sedation in dental treatment, difficulty in seeking dental care, frequency of tooth brushing per day, topical fluoride gel use, fluoride toothpaste use, fluoride mouth rinse, and fluoride tablet uses. In the logistic regression analysis for caries (yes vs. no), group 2 children were significantly less likely to have dental caries compared to controls (odds ratio=0.2, 95% confidence interval: 0.1-0.4), adjustment for age, sex, regular dental visit, frequency of tooth brushing per day, fluoride toothpaste use, fluoride tablets use, fluoride gel use, fluoride mouth rinse use, parents' educational levels, and birth order. The multiple linear regression analysis found that group 2 children had significantly lower dmft than controls after controlling for important factors. DMFT were not different among groups in the multivariable analysis. In conclusion, mentally retarded children in the special institutions had less dental caries than mentally retarded children in special program and control children in elementary schools.

Keywords: mental retardation, oral health, dental caries, treatment need

## **Background and Specific Aims**

Previous studies consistently showed that mentally retarded children had a significantly lower DMFT or DMFS than normal controls [1,2]. People with mild mental retardation appeared to have higher frequency of caries than those with moderate or severe retardation [3,4,5]. Important factors related to caries risk of mentally retarded persons were: institutionalization, frequent consumption of sugar-sweetened snacks, and poor standard of oral hygiene [4,6,7]. The one study [8] conducted in Taiwan about 10 years ago provided precious information about poor periodontal health of mentally retarded children in an institution. However, the caries experience, periodontal health condition, and treatment needs of mentally retarded children in other institutions and in regular elementary school has not been studied and is still unknown. It is important to assess the current oral health condition and treatment needs of this minority group in Taiwan. It is also necessary to understand whether these mental retarded children have received the same dental care, both quantitatively and qualitatively, as normal children, and their barriers to utilization of dental health services.

The purpose of this epidemiological study is to investigate the oral health condition, treatment needs, and the associated factors of 6-12 year-old children with mental retardation. The specific aims are to: (1) examine caries status, periodontal health, previous dental treatment, and treatment needs of children with mental retardation; (2) compare oral health, treatment needs, and risk factors among: mentally retarded children attending regular elementary schools, those at special institutions, and the normal controls, adjustment for important factors; and (3) investigate the relationship between children's oral health and use of dental services, and parents' opinion about the importance of good dental health in their children, perception of treatment needs, and

barriers to utilization of dental services.

## Methods

This study recruited three groups of children. Group 1 had 135 mentally retarded students in the special education programs from seven elementary schools. Group 2 included 82 6-12 year-old mentally retarded children in special institutions. Group 3, the control group, consisted of 488 students at regular program from seven elementary schools in Taichung city.

The seven schools were randomly selected from 10 schools with special education program in Taichung city. From each selected school, we invited all students in the special program to participate and randomly chose two or three classes in the regular program. Parents of group1 and group 2 children were asked to sign an informed consent for oral examination. These children received a questionnaire for parents to answer and an oral examination. A dentist examined all participants following the guidelines of the fourth version of Oral Health Survey by the World Health Organization [9].

The response rates for oral examination ranged from 72% to 99% and for questionnaire survey 87% to 99% for three groups of children. The main reason for non-response in oral examination was lack of informed consent from parents.

Data analysis consisted of the analysis of variance, and multivariable regression analysis, using the SAS (SAS Institute Inc.) version 8.0 software.

## Results

The results of oral examination showed that both mean dmft (decayed, missing and filled primary tooth) (2.7, 2.3, and 1.8 for controls, group1, and group2, respectively) and mean DMFT (decayed, missing, and filled permanent tooth) (1.4, 1.5, and 0.9 for controls, group1, and group 2, respectively) were not significantly different among three

groups of children. The caries prevalence was 83%, 78%, and 49% respectively for controls, group1, and group 2, respectively ( $p < 0.05$ ). As for individual tooth's treatment need, only one-surface filling was significantly higher in group 1 children. All other treatment needs were similar among three groups.

In the questionnaire survey, the following variables distributed significantly different among three groups: parent's perception of child's dental problems and treatment needs, ever had a dental visit, ever had general anesthesia or sedation in dental treatment, difficulty in seeking dental care, frequency of tooth brushing per day, topical fluoride gel use, fluoride toothpaste use, fluoride mouth rinse, and fluoride tablet uses.

From the logistic regression analysis for caries prevalence, group 2 children were significantly less likely to have dental caries compared to controls (odds ratio=0.2, 95% confidence interval: 0.1-0.4), adjustment for age, sex, regular dental visit, frequency of tooth brushing per day, fluoride toothpaste use, fluoride tablets use, fluoride gel use, fluoride mouth rinse use, parents' educational levels, and birth order. There was no significant difference between group1 children and controls.

The multiple linear regression analysis found that group 2 children had significantly lower dmft than controls after controlling for age, sex, regular dental visit, frequency of tooth brushing per day, fluoride toothpaste use, fluoride tablets use, fluoride gel use, fluoride mouth rinse use, parents' educational levels, and birth order. DMFT were not different among groups in the multivariable analysis.

## Discussion

Mentally retarded children in the special institutions had less dental caries than mentally retarded children in special program and control children in elementary schools. The findings were similar to results of previous studies. Furthermore, mentally retarded children were more likely to have

experience of receiving dental treatment under the condition of general anesthesia or sedation. Their parents also reported more difficulties in seeking dental care for their children. Uses of fluoride tablets and gel were more prevalent among these children with special needs.

Interpretation of the study results should consider several issues. First, other potential confounding factors were not taken into account in the analysis, such as frequency of snacking or eating sweets. The information was not collected in the study and therefore could not be evaluated. Second, social economic status of study subjects was assessed using parents' educational levels as surrogate. Third, group 1 and group 2 study subjects could be heterogeneous regarding their mental retardation status.

### Self Evaluation of Study Results

This study has several strengths. First, the oral examination was conducted by a trained dentist following the guideline of the World Health Organization. It would minimize the potential misclassification of dental health condition. Second, many important factors related to oral health were evaluated in the multivariable analysis to reduce potential confounding effect in assessing the dental caries-mental retardation association. Third, both mental-retarded children in regular school and in special institutions were included in this study.

Limitation of this study is discussed as follows. First, the effect of nutrition on dental health was not assessed. Second, the two groups of mental-retarded children could be heterogeneous. Further analysis accounting for this status is needed. Finally, testing of oral microorganisms associated with dental caries was not available to assess the their effects on dental health in study subjects.

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