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**Utilization of Dental Services
for Foreign Children in Korea**



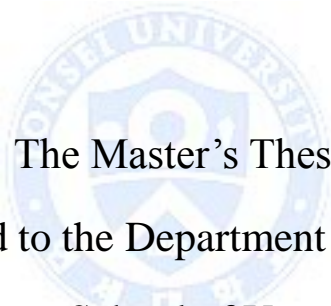
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Department of Dentistry

The Graduate School, Yonsei University

**Utilization of Dental Services
for Foreign Children in Korea**

Directed by Professor Lee, Jae Ho



The Master's Thesis

Submitted to the Department of Dentistry
The Graduate School of Yonsei University
in partial fulfillment of the requirements
for the degree of Master of Dental Science

Rute Mateus Vanda

August 2015

**This certifies that the dissertation of
Rute Mateus Vanda is approved.**

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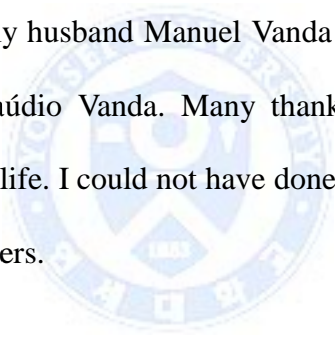


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Abstract

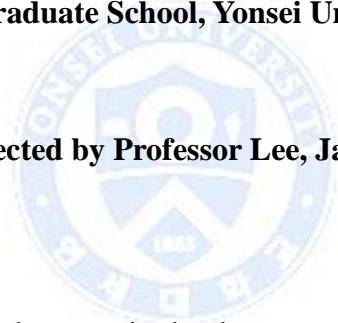
**Utilization of Dental Services
for Foreign Children in Korea**

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(Directed by Professor Lee, Jae Ho)



With the globalization and economic development, the number of foreigners in South Korea has been more than doubled during last two decades. This study aims at investigation of the utilization status of dental services by foreign children living in Korea and their level of satisfaction, thereby establishing appropriate dental health service and improving related policies for foreign children living in Korea.

We developed a structured questionnaire with 35 questions: 14 questions relevant to demographic characteristic and 21 questions concerning oral hygiene and dental experience of the child. The participants of this study were from various groups of foreigners, and 391 questionnaires were used for statistical analysis.

The participants of this study do not reflect the actual characteristics of foreigners in Korea, regarding nationality distribution and level of socioeconomic level. The nationality distribution of the participants consisted of high percentage of countries from African continent (23.6%), which was as high as the North America (24.1%).

The participants of this study showed low dental health knowledge concerning oral hygiene and prevention of dental caries. The participants reported very low level of use of floss and fluoride treatment with the rate of 18.9% and 21%, respectively. These results may result from high percentage of participants from Africa, where oral health care system is not well established yet.

Utilization of dental health service and type of dental clinics were similar before and after coming to Korea. The participants showed overall satisfaction regarding the quality of dental treatment and friendliness of staff, and many of them answered treatment fee and communication need to be improved.

Expansion of obligatory infants and youth dental health checks and dental health education towards foreign children is needed to improve the oral health and prevent dental caries regarding the foreign children living in Korea.

Keywords: pediatric dental service, foreign children, Korea

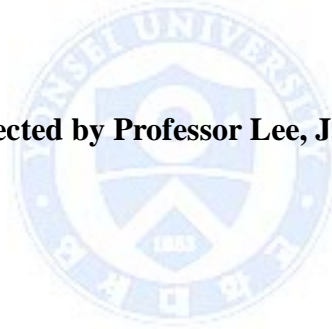
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I. INTRODUCTION

Korea has been transformed into a major migration destination in Asia over the past two decades. The number of foreign population has been more than doubled in 2015, comprising about 1.81 million people, compared to that in 2005 (Ministry of Justice, 2015). According to the statistics in 2013, the number of resident foreigners in Korea accounted for 3.13% of the entire population. This sudden increase of resident foreigners in Korea may have been resulted from Korea's economic development and

globalization. The reasons of immigration vary, such as tourism, employment, studying abroad, and international marriage. And the largest number of migrants came from china, comprising 49.4% of all, followed by the United States (8.5%), Vietnam (7.6%), Japan (3.6%), Thailand (3.5%), and Philippine (3.0%) (Korean Immigration Service and Ministry of Justice, 2013).

According to a survey conducted by the Korea Institutional Labor Foundation, the most frequently answered difficulties were language and cultural difference, followed by health problems (Seol, 2003). In a study regarding the health status of domestic immigrant workers, 91.1% of the respondent answered to have no disease before coming to Korea, but only 54.9% of them reported to have no disease after their migration to Korea. 38.5% of the respondents answered their health status became worse after they came to Korea (Jung et al., 2008). These results indicate that relatively acceptable health status of the immigrant workers at their home become aggravated as they overlook or neglect their health problems as living in Korea. There are various obstacles that make immigrant workers and foreigners hesitate to visit medical facilities and receive health care, such as financial problem, language, lack of time, and low level of dental health knowledge.

The Constitution of the World Health Organization declared that “The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition” (World Health Organization, 1948). Therefore, health is also a basic right of foreigners who are physically far apart from their country, and the governments of

their residing countries have obligation to protect their health right. Nowadays, large population of foreigners are living and working in Korea, and they should be considered as a part of Korean society and should be protected of their health right. However, the lack of health care policy and service for the foreigners and the financial burden of medical expenses appear to be problems. According to the recent study, the frequency of foreigner treatment recorded from domestic clinics is continuously increasing compared to the past.

Oral health is part of total health and cannot be ignored. Furthermore, it should be recognized as a public health problem (Cameron and Widmer, 2013). When it comes to overall medical services and health problems, oral health management is prone to be neglected compared to other systematic diseases. However, it is widely accepted that there is strong evidence that the general health status of young children directly influences their health, development and well-being throughout life. Severe dental caries in early childhood can disturb physical growth and cognitive development, by interfering with sleep, appetite and eating patterns, poor school behavior, and negative self-esteem (Kim et al., 2010). Inverse relationship between socioeconomic status and caries prevalence has been reported in studies of children less than six years of age. Children with immigrant backgrounds have been reported to have three times higher dental caries rates compared to non-immigrants in the United States (American Academy of Pediatric Dentistry, 2013).

According to statistics in 2013, the population of foreign children under age 9 living in Korea comprised about 3.8% (59,584) of all foreigners living in Korea. With the

acceleration of globalization, the number of foreign children in Korea will increase. Although there are some studies of utilization of dental service to adult foreigners, there is yet no study about utilization of dental service by foreign children in Korea (Ministry of Justice, 2013). The purpose of this study was to investigate the utilization status of pediatric dental services for foreign children living in South Korea as well as their level of satisfaction. This study is designed to provide preliminary data to provide enhanced dental service to foreign children and to establish health care policy for foreign children living in Korea.



II. MATERIALS AND METHOD

1. Subject of Study

This study was conducted to assess the utilization status of pediatric dental services for foreign children, during September 20th to December 5th of 2014. Data was collected from random foreign children between 6 months to 14 years old, who are living in Korea. We used structured questionnaire with written information about the study and dental recommendation for children. The total number of collected questionnaires was 411 and among them, 20 questionnaires with inadequate response were eliminated. In total, 391 were used for statistical analysis.

The participants were from Embassies of Africa, Asia, Australia and Oceania, Europe, North America and South America. Foreign people encountered on the streets in Hannam-Dong and Itaewon also participated in this study: they were from Brazil, China, Philippine, Ghana, Italy and Nigeria. Other groups of people or institutions participated in this study include the military, the International Lutheran church, Youngsan-Gu office, International schools of South Korea., the Word of Faith Mission Center Program, Women`s Federation for World Peace-International Women in Korea, Seoul Children`s Dental Center, Soon-Chun-Hyang University Hospital-International Clinic (Depart. of Family Medicine), and Severance Hospital - International Clinic Care Center (Depart. of Pediatric).

Inclusion Criteria

- Children from 6 months to 14 years of age with immigrant backgrounds were included.

Exclusion Criteria

- All children younger than 6 months of age or older than 15 years were excluded. In addition, samples with age information missing, inadequate response, and not of immigration background, were excluded.

2. Method of Study

The researcher revised and supplemented the tools used by Choi and Kim's thesis for the questionnaire in order to establish adequate objective of this study (Choi and Kim). Research items are 35 questions in total composing of 14 questions relevant to demographic characteristic and 21 questions concerning oral hygiene of the child.

3. Method of Analysis

The data for this study was gathered by SPSS (Statistical Package for the Social Science Version 12.0) program. Demographic characteristics and The Utilization Status of Pediatric Dental Services for Foreign Children Living in Korea were analyzed by frequency and percentage. Other criteria were analyzed by descriptive statistics.

III. RESULTS

1. General Information of Participated Parents

A total of 237 foreign parents participated in the survey. There were 18 subjects in 20s, 95 subjects in 30s , which was the highest followed by 79 subjects in 40s , 29 subjects in 50s, and 3 subjects over 60 years old, each taking up 7.6%, 40.1%, 33.3%, 12.2%, and 1.3% respectively. 86(36.3%) participants were male, and 149 (62.9%) were female.

There were 72 (30.4%) Asian parents ranking the first place, and 57(24.1%) North American parents, 56(23.6%) African parents, 23(9.7%) European parents, 21(8.9%) South American parents and finally 6(2.5%) Australian and Oceanian parents.

Respecting education is quite high with 102 college graduates, 54 master´s degree and 34 post-graduates followed by 22 high school graduates, each taking up 43.0%, 22.8%, 14.3%, and 9.3% respectively. Regarding the occupation, most (85) were housewives, 35 were diplomats, 29 were company employees , 24 were businessmen, 22 were language teachers, 14 were students , and 8 were professional soldiers each with the percentage of 35.9%, 14.8%, 12.2%, 10.1%, 9.3%, 5.9% and 3.4% respectively. Their verbal abilities in Korean were classified as very fluent (11.39%), fluent (9.7%), moderate (19.8%), poor (17.72%), and very poor (40.51%) (Table 1).

Table 1. General information of participated parents

| Category | Classification | Number of subjects (%) |
|-------------|-----------------------|------------------------|
| Total | | 237 (100) |
| Age | 20s | 18 (7.6) |
| | 30s | 95 (40.1) |
| | 40s | 79 (33.3) |
| | 50s | 29 (12.2) |
| | Over 60 | 3 (1.3) |
| | Missing | 13 (5.5) |
| Gender | Male | 86 (36.3) |
| | Female | 149 (62.9) |
| | Missing | 2 (0.8) |
| Nationality | Africa | 56 (23.6) |
| | Asia | 72 (30.4) |
| | Australia and Oceania | 6 (2.5) |
| | Europe | 23 (9.7) |
| | North America | 57 (24.1) |
| | South America | 21 (8.9) |
| | Missing | 2 (0.8) |
| Residence | Seoul | 200 (84.4) |
| | Kyungi-do | 27 (11.4) |
| | Others | 8 (3.4) |
| | Missing | 2 (0.8) |
| Education | High school | 22 (9.3) |
| | College | 102 (43.0) |
| | Post-graduate | 34 (14.3) |
| | Master's degree | 54 (22.8) |
| | Missing | 25 (10.5) |
| Employment | Business | 24 (10.1) |
| | Company employee | 29 (12.2) |
| | Diplomat | 35 (14.8) |
| | Housewife | 85 (35.9) |
| | Language teacher | 22 (9.3) |
| | Professional soldier | 8 (3.4) |
| | Student | 14 (5.9) |
| | Others | 31 (13.1) |

| | | |
|------------------------------|-------------|------------|
| Mother Language | English | 98 (41.4) |
| | French | 11 (4.6) |
| | Japanese | 30 (12.7) |
| | Spanish | 9 (3.8) |
| | Others | 116 (48.9) |
| Verbal abilities in Korea | Very fluent | 27 (11.4) |
| | Fluent | 23 (9.7) |
| | Moderate | 47 (19.8) |
| | Poor | 47 (17.7) |
| | Very poor | 47 (40.5) |
| | Missing | 47 (0.8) |



2. General Information of Participated Children

Among 391 foreign children were included in the present study. The results showed that the age is quite high between 0-5 years old taking up 48.1% and 6-10 years old taking up 29.9% followed by 11-14 years old taking up 20.7% which is relatively low when we compared to the two first groups. Of these, 197 male were 50.4% of the whole while 188 female took 48.1% of the whole. Concerning education most were elementary school students with the number of 129 which was 33.0%, 97 none education taking up 24.8%, 96 kinder taking up 24.6%, 67 middle school taking up 17.1%, and 2 high school students which was 0.5%. Their verbal abilities in Korean, 38 speak very fluently and fluently groups took up 9.7%, 47 of the children who speak moderate Korean taking up 12.0%, 71 poor taking up 18.2% is high, and 182 children who are very poor Korean taking up 46.5% quite high due the difficulty in learning Korean and also most of foreign children prefer studying at international schools, according to their nationality (Table 2).

Table 2. General information of participated children

| Category | Classification | Number of subjects (%) |
|---------------------------|----------------|------------------------|
| Total | | 391 (100) |
| Age | 0-5 | 188 (48.1) |
| | 6-10 | 117 (29.9) |
| | 11-15 | 81 (20.7) |
| | Missing | 5 (1.3) |
| Gender | Male | 197 (50.4) |
| | Female | 188 (48.1) |
| | Missing | 6 (1.5) |
| Education | Kinder | 93 (24.6) |
| | Elementary | 129 (33.0) |
| | Middle school | 67 (17.1) |
| | High school | 5 (0.5) |
| | Missing | 97 (24.8) |
| Verbal abilities in Korea | Very fluent | 38 (9.7) |
| | Fluent | 38 (9.7) |
| | Moderate | 47 (12.0) |
| | Poor | 71 (18.2) |
| | Very poor | 182(46.5) |
| Missing | 15 (3.8) | |

3. Children's Oral Hygiene Care

Regarding the investigation on brushing frequency, only 29 (7.4%) children have never brushed their teeth, 80 (20.5%) brushed the teeth once a day, 229 (58.6%) brushed their teeth twice a day, and 53 (13.6%) brushed more than twice. Regarding children's tooth-brushing performance, the survey showed that 158 (40.4%) children brushed on their own, 138 (35.4%) brushed with supervision or help by adults, and only 51 (13.0%) children were receiving tooth brushing by adults solely. Regarding the use of fluoride toothpaste, 272 (69.6%) used fluoride toothpaste and 114 (29.2%) do not use fluoride toothpaste. Regarding the use of floss, only 74 (18.9%) used dental floss and 307 (78.5%) of foreign children have never flossed their teeth. Regarding the experience in fluoride treatment 83 (21.2%) had the experience and 302 (77.2%) did not have the experience of fluoride treatment (Table 3).

Table 3. Children's oral hygiene care

| Category | Classification | Number of subjects (%) |
|----------------------------------|--|------------------------|
| Total | | 391 (100) |
| Brushing frequency | None | 29 (7.4) |
| | Once | 80 (20.5) |
| | Twice | 229 (58.6) |
| | More than twice | 53 (13.6) |
| Child's tooth-brushing performer | Adults solely | 51 (13.0) |
| | Child alone | 185 (40.4) |
| | Child with supervision or help from adults | 138 (35.4) |
| | Missing | 43(11.0) |
| Fluoride toothpaste | Used | 272 (69.6) |
| | Unused | 114 (29.2) |
| | Missing | 5 (1.3) |
| Floss | Used | 74 (18.9) |
| | Unused | 307 (78.5) |
| | Missing | 10 (2.6) |
| Fluoride treatment | Yes | 83 (21.2) |
| | No | 302 (77.2) |
| | Missing | 6 (1.5) |

4. Children's Dental Experience before Coming to Korea

Among the total of 391 children included in this study, 266 children(68.0%) did not have any dental treatment experience and only 112 (28.6%) had the experience of dental treatment before coming to Korea. 57 (50.9%) have visited private dental clinic and only 25 children (22.3%) have visited a pediatric dental clinic.

Among the whole dental appointments, 32 (28.6%) were filling treatments, 25 (22.3%) were orthodontic treatment, 19 (17.0%) were preventive treatment, 13 (11.6%) were routine check-up, 12 (10.7%) were gum treatment, and 10 (8.9%) were extraction or surgical treatment (Table 4).



Table 4. Children's dental experience before coming to Korea

| Category | Classification | Number of subjects (%) |
|-------------------|--------------------------|------------------------|
| Total | | 391 (100) |
| Dental experience | Yes | 112 (28.6) |
| | No | 266 (68.0) |
| | Missing | 13 (3.3) |
| Clinic type | General hospital | 20 (17.9) |
| | Pediatric dental clinic | 25 (22.3) |
| | Private dental clinic | 57 (50.9) |
| | Missing | 10 (8.9) |
| Kind of treatment | Extraction/Surgery | 10 (8.9) |
| | Filling | 32 (28.6) |
| | Gum | 12 (10.7) |
| | Orthodontic treatment | 25 (22.3) |
| | Root canal therapy/Crown | 6 (5.4) |
| | Preventive treatment | 19 (17.0) |
| | Check up | 13 (11.6) |

5. Children's Dental Experience in Korea

Among the total of 391 children participated in this study, only 142 (36.3%) responded that they have the experience of dental treatment in Korea and 238 (60.9%) responded that they do not have the experience of dental treatment for various reasons: 50 (21.0%) no need, 33 (13.9%) cost, 31 (13.0%) wrong answer, 27 (11.3) too young and 9 (3.8%) language problem. Most of the children (68) were treated in private dental clinic (47.9%) 39 were treated in pediatric dental clinic (27.5%) and almost 32 were treated in general hospital (22.5%) due to the policies in the institution.

Regarding the facility for selection criteria, quite high number (95, 66.9%) of participants were recommended by friends and families, 27(19.0%) of participants were recommended by dentist. Regarding the type of treatments, 58(40.8%) were filling treatment followed by 33(23.2%) orthodontic treatment , 32(22.5%) root canal therapy/crown, 32(22.5%) extraction/surgery treatment, 25(17.6%) check-up, 10(7.0%) gum treatment, and 2(2.1%) preventive treatment .

Inquiries into payment of dental treatment were found as follows: 53 self-pay (37.3%), 49 insurance (34.5%), followed by 35 partially self-pay and insurance/company (24.6%) and 13 company (9.2%).

The most frequently reported improvement point of dental treatment in Korea were communication problem (91), and cost (74) each with the percentage of 64.1% , and 52.1% respectively. Only 0.7% was exclusively related to environment (Table 5).

Table 5. Children's dental experience in Korea

| Category | Classification | Number of subjects (%) |
|--|----------------------------------|------------------------|
| Total | | 391 (100) |
| Dental experience | Yes | 142 (36.3) |
| | No | 238 (60.9) |
| | Missing | 11 (2.8) |
| Reason that children had no dental experience in Korea | Cost | 33 (13.9) |
| | Language problem | 9 (3.8) |
| | Too young | 27 (11.3) |
| | others | 9 (3.8) |
| | No need | 50 (21.0) |
| | Wrong answer | 31 (13.0) |
| | Missing | 79 (33.2) |
| | Facility where child was treated | General hospital |
| Pediatric dental clinic | | 39 (27.5) |
| Private dental clinic | | 68 (47.9) |
| Pediatric & Private dental clinic | | 1 (0.7) |
| Missing | | 2 (1.4) |
| Facility selection criteria | Affordable treatment | 4 (2.8) |
| | Closest dental clinic | 16 (11.3) |
| | Recommendation of dentist | 27 (19.0) |
| | Recommended by friends/families | 95 (66.9) |
| | Website | 10 (7.0) |
| Kind of treatment | Extraction/Surgery | 32 (22.5) |
| | Filling | 58 (40.8) |
| | Gum | 10 (7.0) |

| | | |
|-------------------------------|---|-----------|
| | Orthodontic treatment | 33 (23.2) |
| | Root canal therapy/Crown | 32 (22.5) |
| | Preventive treatment | 3 (2.1) |
| | Check up | 25 (17.6) |
| Treatment of payment/payer | Company | 13 (9.2) |
| | Insurance | 49 (34.5) |
| | Self-pay | 53 (37.3) |
| | Partially self-pay and insurance/company | 35 (24.6) |
| Improvement point | Attitude of staff | 5 (3.5) |
| | Communication | 91 (64.1) |
| | Cost | 74 (52.1) |
| | Environment | 1 (0.7) |
| | Quality of treatment | 16 (11.3) |
| | Speed of treatment | 13 (9.2) |

6. Satisfaction on dental clinic in Korea

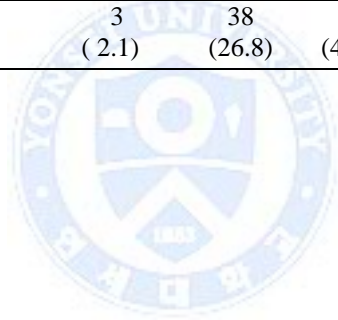
Regarding the level of satisfaction on dental clinic in Korea, foreign parents had different opinions. On the positive aspects: quality of treatment was quite good. 46 (32.4%) were satisfied and 61 (43.0%) were very satisfied. Only 2 (0.7%) were very dissatisfied.

Results showed that pleasant environment and speed of treatment were quite good as well with 49 (34.5%) satisfied and 55 (38.7%) very satisfied followed by 52 (36.6%) okay and 43 (30.3%) dissatisfied. On the negative aspects: cost of treatment and communication were quite low. Regarding the cost of treatment, showed 27 (19.0%) were very dissatisfied, 30 (21.1%) were satisfied and 22 (15.5%) were very satisfied. Regarding the communication, 17 (12.0%) were very dissatisfied, 27 (19.0%) were satisfied and 37 (26.1%) were very satisfied.

However, according to the overall satisfaction of dental clinic in Korea, 39 (10.0%) were very satisfied and 57 (40.1%) were satisfied followed by 38 (26.8%) okay. The percentage of very dissatisfied and dissatisfied participants were quite low with the percentage of 3 (2.1%) and 3 (2.1%) respectively (Table 6).

Table 6. Satisfaction on dental clinic in Korea

| Category | Number of subjects (%) | | | | | |
|----------------------|------------------------|--------------|--------------|--------------|----------------|------------|
| | Very dissatisfied | Dissatisfied | Okay | Satisfied | Very satisfied | Missing |
| Quality of treatment | 2 (1.4) | 1 (0.7) | 31 (21.8) | 46 (32.4) | 61 (43.0) | 1 (0.7) |
| Pleasant environment | 0 (0.0) | 1 (0.7) | 35 (24.6) | 49 (34.5) | 55 (38.7) | 2 (1.4) |
| Speed of treatment | 2 (1.4) | 9 (6.3) | 52 (36.6) | 43 (30.3) | 31 (21.8) | 5 (3.5) |
| Cost of treatment | 27 (19.0) | 23 (16.2) | 39 (27.5) | 30 (21.1) | 22 (15.5) | 1 (0.7) |
| Staff friendliness | 1 (0.7) | 3 (2.1) | 34 (23.9) | 41 (28.9) | 59 (41.5) | 4 (2.8) |
| Communication | 17 (12.0) | 15 (10.6) | 45 (31.7) | 27 (19.0) | 37 (26.1) | 1 (0.7) |
| Overall satisfaction | 3 (2.1) | 3 (2.1) | 38 (26.8) | 57 (40.1) | 39 (26.8) | 2 (1.4) |



IV. DISCUSSION

This study was performed to investigate the utilization status of pediatric dental service for foreign children living in Korea. All questionnaires were answered by parents. The participants in this study showed low dental knowledge regarding oral hygiene and preventive dental care, and most of them showed okay or higher level of satisfaction regarding quality of dental service. However, dental treatment fee and communication still appeared to be barriers to foreign patients.

The participants of this study do not reflect the actual characteristics of foreigners in Korea, regarding nationality distribution and level of socioeconomic level. The nationality distribution of the participants in this study consists of peculiarly high percentage of countries from African continent (23.6%), which was as high as the North America (24.1%). According to the Immigration Policy headquarters in 2015, 50.6% of the foreigners in Korea are from China, followed by the United States (7.8%), Vietnam (7.2%), and Thailand (4.9%), and others (Ministry of Justice, 2015). The high percentage of African participants in this study is due to convenient sampling by the author, who is a wife of diplomat from Angola. Furthermore, most of the respondents had high education level and lived in Seoul: 80% of the respondents were either college graduates or of higher education level. Therefore, this study is not a randomized controlled study. However, it still provides some meaningful information about dental health knowledge and utilization status of

pediatric dental services regarding foreign children with relatively high socioeconomic background living in Seoul.

Most respondents had basic knowledge about the importance of brushing twice a day and fluoride toothpaste. The effectiveness of fluoride in preventing dental caries has been confirmed and regular use of fluoride toothpaste is considered to one of the most cost-effective dental caries prevention methods (Marinho, 2009). About 70% of the respondents answered their children brush their teeth at least twice a day and use fluoridated toothpaste. However, most respondents were deficient of the knowledge about additional preventive dental cares, such as tooth brushing under parents' supervision, use of dental floss, periodic fluoride application, and regular dental check-up. Preschool children are often too young to perform effective tooth-brushing and therefore, parental tooth-brushing is recommended (Rayner et al., 2003). About 40.4 percent of the children were brushing their teeth without supervision or help from adults. Nearly 80% of the respondents said their children were not using floss and also not receiving any fluoride treatment. This was a surprising result considering that more than 80% of the respondents had high education level. Dental health knowledge did not accord with the level of education in foreign parents included in this study. Instead, it showed some relevance to nationality, that Africa had highest percentage of children (53.3%), who have not experienced both fluoride paste and additional fluoride treatment, followed by Europe (39.1%), North America (21.0%) and Asia (18.0%). Availability and accessibility of oral health system is very limited in African countries, and little is known about the utilization status of oral health services in

African countries (Petersen, 2003, 2004; Varenne et al., 2006). This study shows the lack of oral health knowledge in African parents with high education level, and this result may be reflection of neglected oral health care systems in many African countries.

According to this study, there were no significant barriers that forbid the respondents from visiting dental clinics in Korea. The rate of previous dental experience and type of dental institution they used were similar before and after coming to Korea. When asked for the reason for no dental experience in Korea, only 13% of them referred to dental treatment fee as the main reason and others answered 'no need', 'too young', and 'language problem', with the rate of 21%, 11.3%, and 3.8%, respectively. For this question, 33% of the respondents did not specify the reason. Based on these results, low utilization rate of dental health service by foreign children in Korea is not attributable to difficult accessibility to dental clinics, language problem, or financial burden, but low dental health knowledge and insufficient interests about oral health. Most of the respondents took their children to dental clinics when dental needs occur, such as dental cavitation, pain, or mobility of teeth. This is supported by the result that most frequently received dental treatment was 'filling' both before and after coming in Korea.

The foreign children who had received dental treatment in Korea showed overall satisfaction of about 95% regarding quality of treatment, pleasant environment, speed of treatment, and friendliness of staff. However, treatment fee and communication were pointed out to be improved. About 60% of the respondents answered they pay for

the treatment fee fully or partially. Only 60% of the respondents were receiving benefits from either insurance or company. Although foreign employee became eligible for Korean worker health insurance since 2004, many foreigners decline to join it for unfavorable application system and requirements. In case of foreign workers, the work health insurance is not obligatory. If they want to join, they have to pay three-month insurance fee in advance and the health insurance applies starting from the date of entry (Hwang, 2010). For such systemic disadvantages and financial burden, many foreigners seem to give up joining Korean health insurance. Without insurance coverage or support from a company, health care fee will remain as a burden to most foreigners living in Korea. Regarding communication, only 20% of the respondents answered to have fluent Korean verbal ability, and more than 60% of them answered to have poor to very poor Korean verbal ability. In this study, the respondents showed similar rate of utilization of dental health service before and after coming to Korea, which indicate that dental treatment fee and communication problem were not barriers to utilization of dental health service. However, in another study regarding foreigners in Korea, no time and financial burden of treatment fee were main reasons for not using dental health service in Korea (Choi and Kim, 2011). Therefore, the result of this study should not be generalized to all foreign population living in Korea, for most foreigners participated in this study were of relatively high socioeconomic group.

Immediate systemic changes and improvements regarding national health insurance, dental treatment fee, or communication support for foreigners are hard to be achieved in short term, but long term governmental considerations are in need since foreign

population are growing these days. Meanwhile, education of the parents of foreign children can be a cost-effective and practicable modality to prevent dental caries and maintain good oral health. In this study, 86% of the group, who said the frequency of tooth brushing is zero, was infants and young children with age of 0-5 years old. It shows low dental health knowledge concerning importance of oral health and hygiene in infants and young children. Educating foreign patients about the importance of good oral hygiene using tooth brushing under parents' supervision, dental floss, and fluoridated tooth paste will be a valuable approach to prevent dental caries and maintain oral health. They should be also educated about the importance of preventive measures, such as additional fluoride application and regular dental examination. Fluoride varnish was introduced for topical application to prolong the contact fluoride with tooth surface and its effectiveness in preventing dental caries is supported by robust scientific evidence form clinical trials (Jiang et al., 2014). The oral health education can be provided at international schools, embassies, or as a part of Korean immigration and integration program. In addition, expansion of the subjects of infants and child dental check to include foreign infants and children will be a meaningful project to keep and improve dental health of foreign children living in Korea. If Korean government takes a step forward to consider the importance of health of the foreigners as well as their employment and integration into Korean society, it will help improve their quality of life in Korea.

Though not included in this study of foreign, North Korean refugees and their children should be also considered as foreigners in Korea. According to data about

oral health status of North Koreans in South Korea, they showed high dft index (6.35) and DMFT index (3.67) compared to South Koreans, 3.15 and 2.27, respectively. Young adolescent North Koreans in South Korea showed 0% experience of sealant or topical fluoride application (Lee and Lee, 2014). According to AAPD guideline, children with immigrant backgrounds have three times higher tooth decay rates than non-immigrants (American Academy of Pediatric Dentistry, 2013). North Korean refugee children should be considered as a part of foreign children living in Korea. There are urgent needs for oral health care toward North Korean refugee children as well as the foreign children living in Korea. In addition, there is another easily neglected population of children in Korea, the children of internationally married couples. According to National Statistical Office, the ratio of international marriage of all marriages is increasing, which increased to 10.8 percent in 2009 compared to 3.5 percent in 2000 (Ministry of Justice, 2013). There needs a study about the status of oral health of the children of internationally married couples to determine the necessity of special dental care for this group of children.

This study has limitations concerning the participants which were collected by convenient sampling. The foreign children population in this study does not represent the actual foreign population living in Korea. The participants are of high socio-economic level, and the percentage of African people is much higher than actual national distribution percentage of them in Korea. In addition, the participants whose native language is not English were more than 50%, but the questionnaires were written in English. Inadequate understanding of the questionnaires and misleading

answers are possible. Furthermore, questionnaires answered by a parent who has many children, often in African family, have possibility of giving incorrect answers about each child. In spite of these limitations, this study still provides valuable data that evoke the Korean governmental approach to educating foreign parents and children about the importance of dental care and utilization of preventive measures.



V. CONCLUSION

This study was performed to investigate the utilization status of pediatric dental service for foreign children living in Korea. All questionnaires were answered by parents. The participants in this study showed low dental knowledge regarding oral hygiene and preventive dental care, and most of them showed okay or higher level of satisfaction regarding quality of dental service. However, dental treatment fee and communication still appeared to be barriers to foreign patients.



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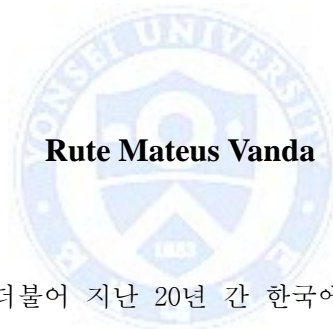


Abstract (in Korean)

국내 거주 외국인 아동의 치과 이용 실태

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Rute Mateus Vanda

세계화 및 경제 발전과 더불어 지난 20년 간 한국에 거주하는 외국인 수는 2배 이상 증가하였다. 이번 연구는 국내에 거주하는 외국인 아동의 치과진료 현황 및 만족도를 설문을 통하여 조사하는 것이며, 이로서 국내 거주 외국인 아동에 대한 치과의료서비스의 확충 및 관련 제도의 개선을 위한 기초 자료를 제공하는 것이다.

이번 연구를 위한 설문지는 총 35개의 문항으로 구성되었으며, 그 중 14개 문항은 응답자의 국적을 포함한 인구통계학적 정보에 관한 문항이었고 나머지 21개 문항은 응답자의 구강 위생 관리 및 치과 경험에 관한 것이었다. 이번 연구는 외국인 학교, 외국인 교회, 대사관, 병원 등을 포함한 다양한 곳에서 만난 외국인들을 대상으로 진행되었으며, 총 391개의 설문지가 통계처리에 사용되었다.

이번 연구에 참여한 외국인 집단의 국적 분포는 현재 한국에 체류하는 외국인의 국적별 통계 실태를 반영하진 않았다. 이번 연구 참가자 중 18.9%가 아프리카 출신이었는데, 이는 북미 비율 (21.0%)과 비슷할 정도로 높았다. 또한 대학교 이상의 학력을 가진 보호자가 80% 이상으로 사회경제적 지위가 높은 외국인들이 연구 대상에 다수를 차지함을 알 수 있었다.

연구 결과 불소치료를 받은 경험이 있는 외국인 아동의 비율은 21.2%로 매우 낮았고, 치실 사용 또한 18.9%로 낮게 나타났다. 이는 구강보건 체계가 아직 잘 확립되지 않은 아프리카 출신 참여자의 높은 비율의 영향도 있지만, 현재 국내 거주하는 외국인 아동 및 보호자의 구강위생 및 우식 예방과 관련된 치과적 지식이 부족함을 또한 나타낸다.

국내 거주 외국인 아동의 한국 방문 전과 후의 치과 경험률은 비슷하였다. 전반적인 만족도 검사에서 치과 치료의 질과 직원의 친절도 등에서는 높은 만족도를 보였으나, 언어 소통의 불편함과 진료비에 대한 부담이 큰 것으로 나타났다.

이번 연구를 통하여 비교적 높은 사회경제적 지위의 한국 체류 외국인들도 자녀의 구강 건강에 대한 지식이 부족함을 알 수 있었다. 국내 거주 외국인 아동의 구강 건강을 증진시키고 치아 우식증을 예방하기 위하여 외국인 아동에 대한 영유아 치과 검진의 확대 및 구강 보건 교육이 필요할 것이다.

핵심되는 말: 국내 거주, 외국인 아동, 치과진료 실태